STUDIO302 - smar

USER'S MANUAL

Studio302

JAN / 13

STUDIO302

Version 1.11

FOUNDATION

SYS32STDME

smar

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INTRODUCTION

This user's manual describes the features of the ***Studio302*** application.

Studio302 is the user-friendly, easy-to-use software tool that integrates all applications included in Smar's Enterprise Automation package, the ***System302***. ***Studio302*** does not incorporate the functionality of the applications, ***Studio302*** only starts the selected application, and each software application is executed apart from the others.

One of the ***Studio302*** characteristics is managing the information from different plant project configurations imported to a single integrated database. This enables integration of all control, operation and maintenance tools to several workstations.

The access rights defined for each engineer or technician operating the plant process guarantee the integrity of the project configuration data. Specific user groups for ***Studio302*** can be created by the operational system in the workstation and they are transparently incorporated to the ***Studio302*** login system.

Allowing simultaneous access to different users minimizes repetitive re-configuring of the same project to different client machines. It also maintains continuous data flow for file transfer.

With ***Studio302***, the maintenance of the plant instruments is more efficient. Using the *Wizard*, the user can perform the maintenance and even replace an instrument in an effective way, reducing the idle time of the plant.

Studio302 runs on Microsoft® Windows XP, Windows Server 2003, Windows 7 or Windows Server 2008. If the user needs further information about versions and types of supported operating systems, refer to the **README** of ***SYSTEM302*** .

This manual refers to version 1.11 of ***Studio302*** available on ***SYSTEM302 version 7.3.5***.

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Section 1

INSTALLATION AND CONFIGURATION

Installation and Configuration

Studio302 is installed by the **SYSTEM302** Installation DVD, along with all the other integrated applications you will use to configure, maintain and supervise your plant.

Please refer to the **SYSTEM302 HANDBOOK**, which describes the procedures to install and configure **SYSTEM302**.

Starting Studio302

After configuring your system using the **System302 Settings** tool, you can start using **Studio302**. On the **Start** menu, click **Programs > SYSTEM302 > Studio302** to run the application.

The first time **Studio302** is executed on the local machine, it is not necessary to type the username and password to gain access to the **SYSTEM302** tools.

To enable the secure mode, click **Settings > Security**, and click **Enable Login.**

After changing this definition, users must log in every time the **Studio302** is initialized. **Studio302** incorporates Windows User Groups. Windows' users can log to **Studio302** using the same login name and password configured for the operating system.

The figure below shows the **Login** dialog box:

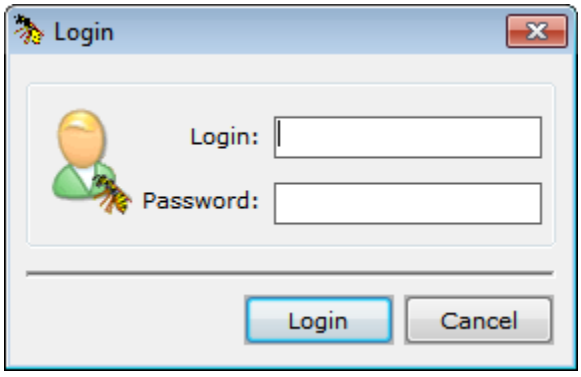


Figure 1.1. User Login

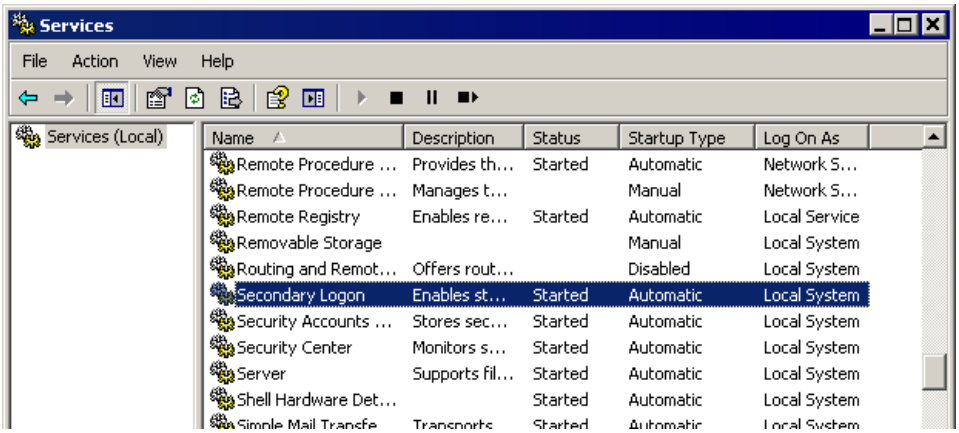
Type the user's login and password and click **Login**. Click **Cancel** to cancel the login procedure and the **Studio302** application will close.

ATTENTION

Using Windows XP, if you are typing the correct login and password but **Studio302** is not allowing the access to the tool, check if the **Secondary Logon** service has been already started.

On the **Start** menu, select **Control Panel > Administrative Tools > Services**. Or else, on the **Start** menu, select **Run** and type **services.msc**.

On the **Services** window, locate the icon of the **Secondary Logon Service**. If this service is not being executed, right-click the icon and select the option **Start**. See the example below:


Services
File Action View Help
Services (Local)
Name Description Status Startup Type Log On As
Remote Procedure ... Provides th... Started Automatic Network S...
Remote Procedure ... Manages t... Manual Network S...
Remote Registry Enables re... Started Automatic Local Service
Removable Storage Manual Local System
Routing and Remot... Offers rout... Disabled Local System
Secondary Logon Enables st... Started Automatic Local System
Security Accounts ... Stores sec... Started Automatic Local System
Security Center Monitors s... Started Automatic Local System
Server Supports fil... Started Automatic Local System
Shell Hardware Det... Started Automatic Local System

Studio302 uses this service to validate the user according to the *Windows Security System*.

Changing the Current Studio302 User

It is not necessary to close the **Studio302** application to change the user logged to the application. On the **File** menu, click the option **Log Off** to change the current **Studio302** user.

A message box will open to confirm the operation:

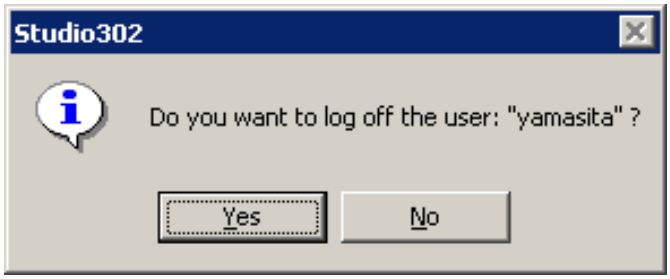


Figure 1.2. Confirm the Log Off procedure

Click **Yes** and the **Login** dialog box will open. Type the name and password of the new user to connect to the **Studio302** again.

If the user clicks **Cancel** on the **Login** dialog box, the **Studio302** application will be shut down.

USER INTERFACE

The figure below shows the **Studio302** interface:

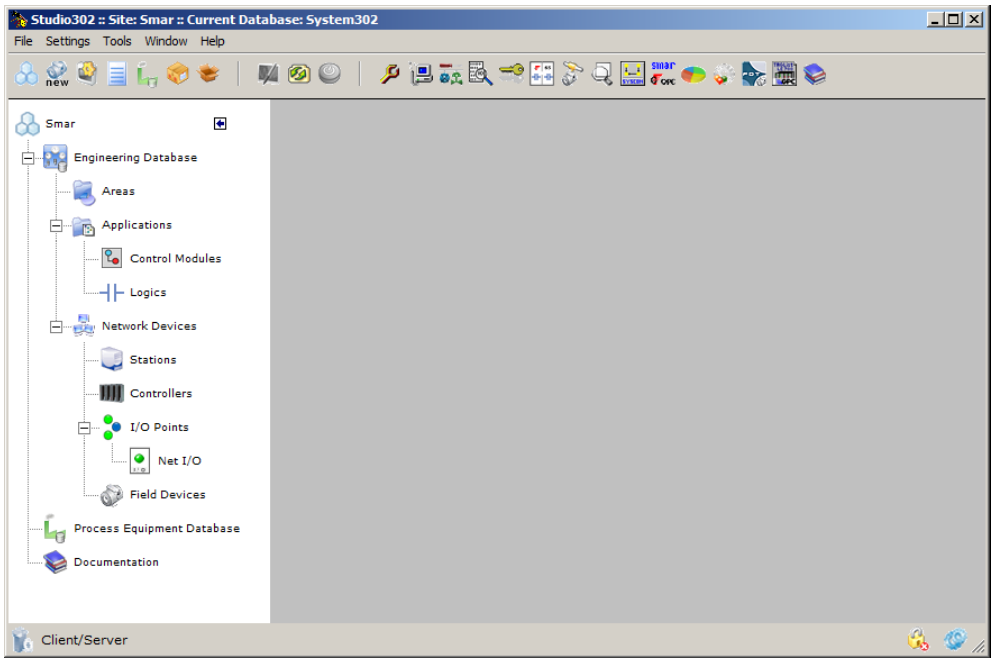


Figure 2.1. Studio302 Interface

The left panel shows shortcuts to open the windows from where the user can access the information related to strategy controls, logics, workstations, controllers, I/O points, and field devices, created in areas configuration files managed by **Studio302**.

The following subsections describe the toolbars, their functionality, and how the users access the plant process control information.

Toolbars

Studio302 has two toolbars located under the main menu:

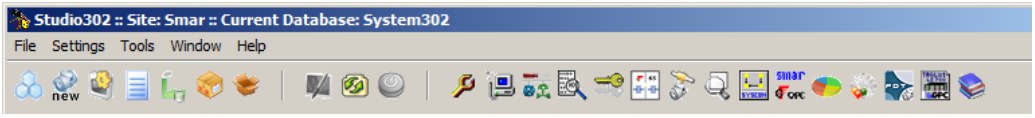


Figure 2.2. Studio302 Toolbars

Main toolbar

- Show/Hide the Topology
Click this button to open or close the left panel that displays the topology tree in **Studio302**.

- New Detect Devices List
Click this button to open the window with the list of new devices detected that can be added to the plant. See the figure below:

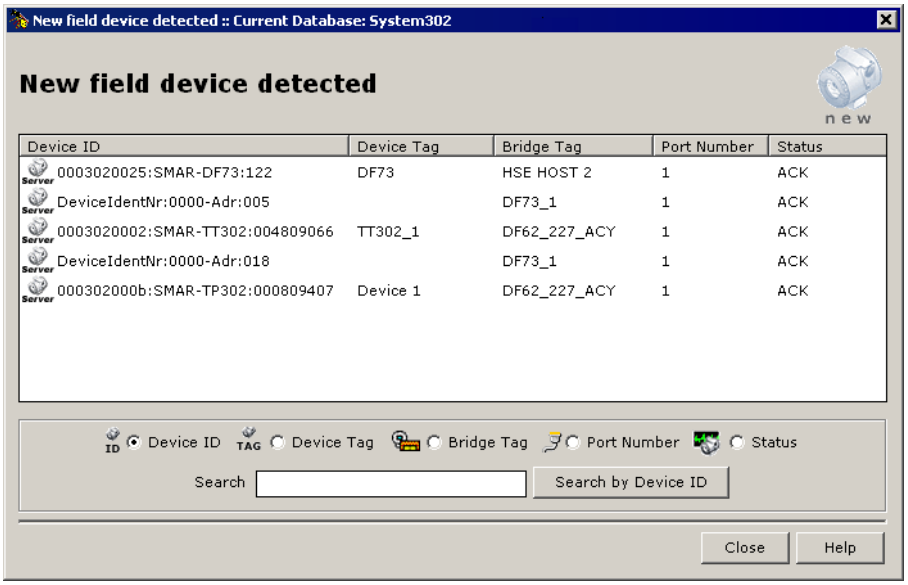


Figure 2.3. New field device detected window

See section **Detecting New Devices**.

- Database

Click this button to open the **Database** window. See section **Database** for details. See the figure below:

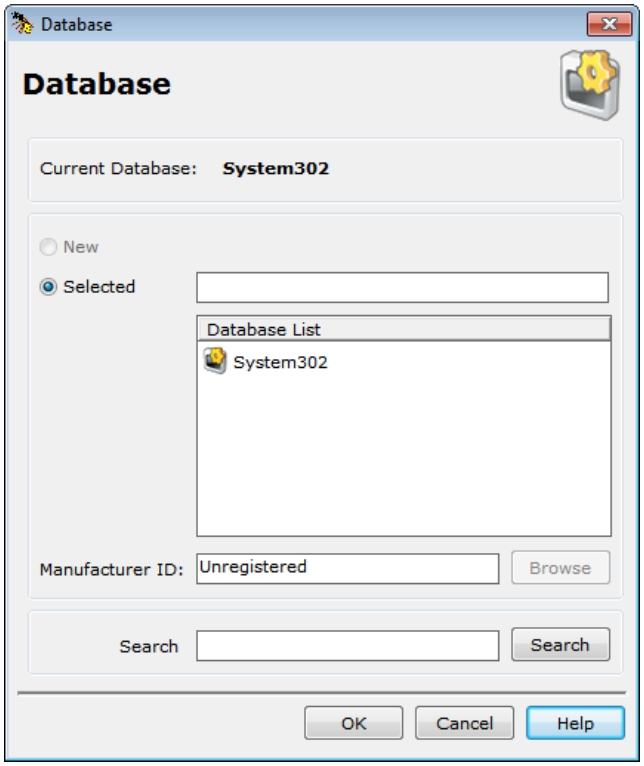


Figure 2.4. Database Configuration Window

- Reports

Click this button to generate the reports related the **SYSTEM302** tasks, the active instruments from the current Database, the *Firmware* versions, or the **SYSTEM302** files installed on the local machine along with the local machine hardware description.

It is not possible to generate two or more reports simultaneously. Only one report window can be shown at a time in the **Studio302** window.

The following dialog box will open:

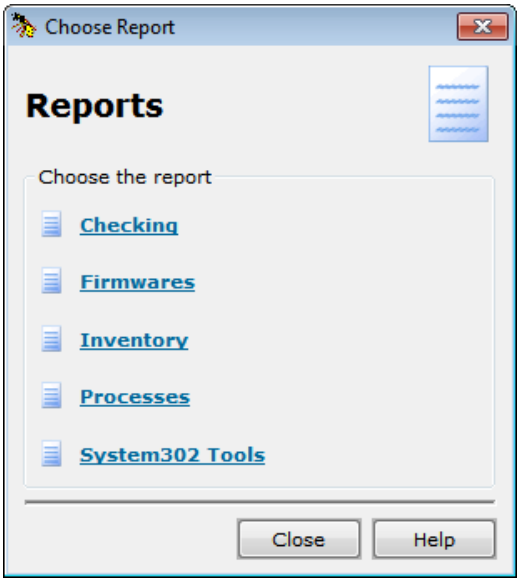


Figure 2.5. Choose a Report

Click the option **Checking** to generate the report that indicates the instruments (field devices and controllers) from the current database which are communicating to the system. This report will show the instrument tag, Device ID, the revision of the Device Description (DD) and the instrument revision.

The communication servers (HSE Server, DFI Server, DD Server e AE Server) must be active on the local machine to generate this report. Click the button **Online/Offline Communication** to activate the servers.

See the example in the figure below:

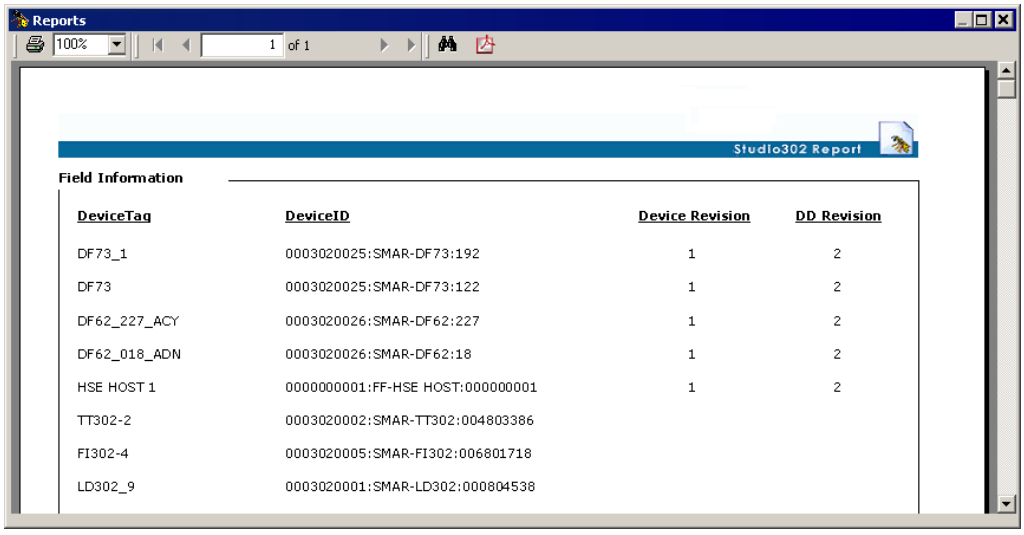


Figure 2.6. Checking Report

Click the option **Firmwares** to generate the report that indicates the versions and date of each installed firmware. See the example in the figure below:

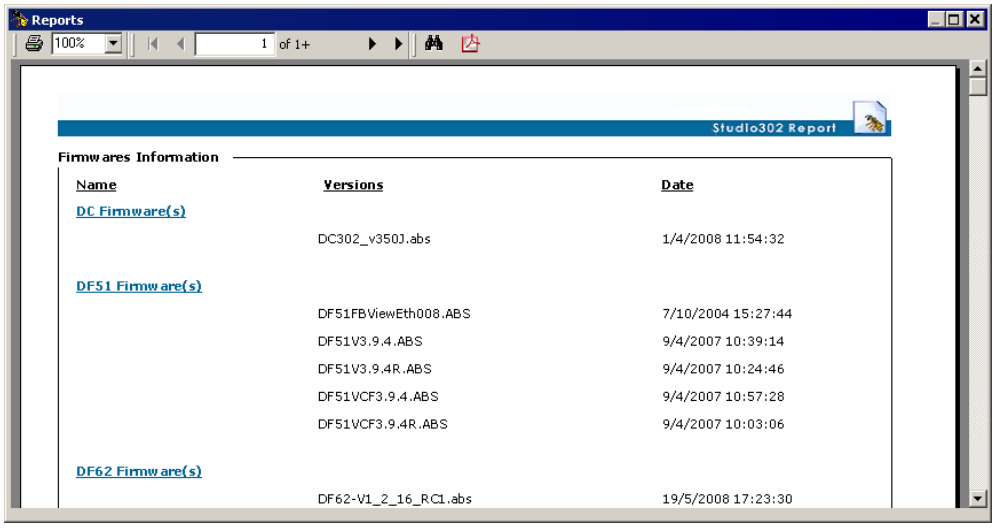


Figure 2.7. Firmwares Report

Click the option **Inventory** to generate the report that lists all files located in the **SYSTEM302** installation folder and indicates the hardware characteristics for the local machine (where **SYSTEM302** was installed).

This report has two sections. The **Hardware** section shows the configuration of the local machine, including the machine name, operating system version, hard disk space, network adapters, etc. The **Software** section reports the **SYSTEM302** version and the number of files related to this installation.

See the example in the figure below:

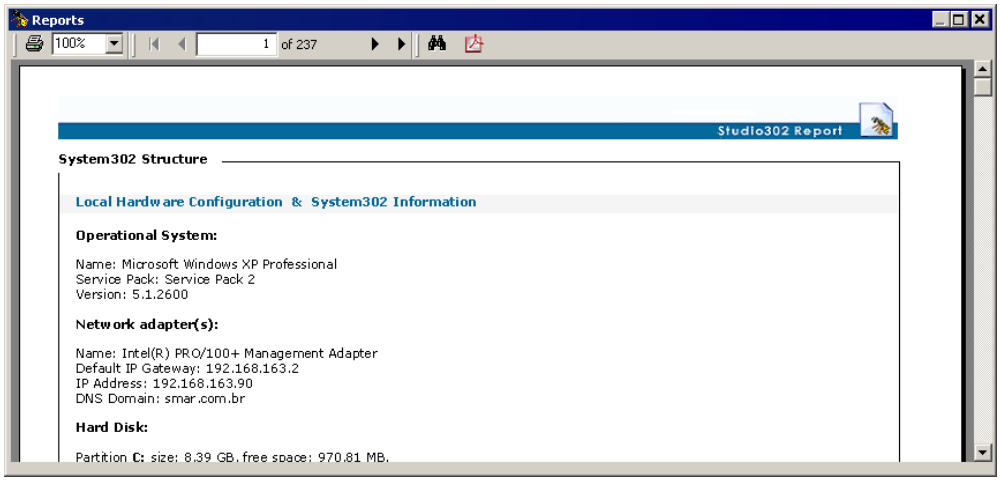


Figure 2.8. Inventory Report

Click the **Processes** option to generate the report that indicates all processes that are running on the station, the related products, their versions and the memory space occupied by them.

See the example in the following figure:

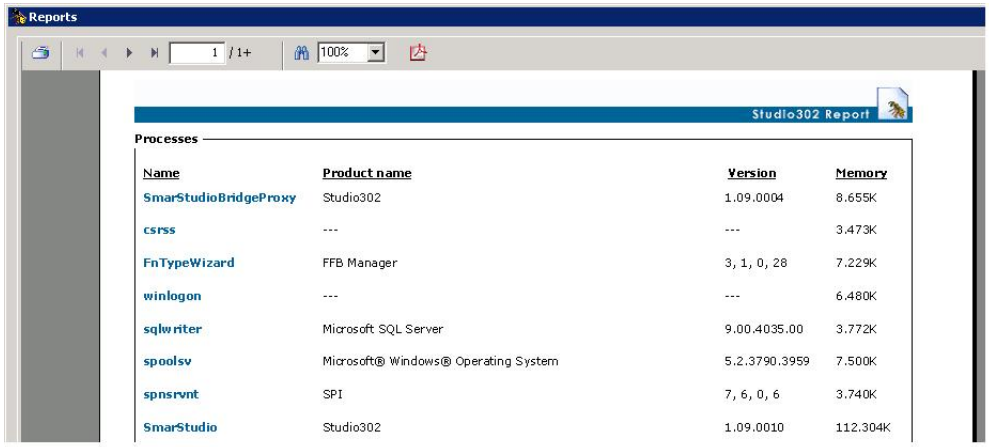


Figure 2.9. Processes Report

Click the option **System302 Tools** to generate the report that indicates the version, installation path and status of each application available with **SYSTEM302**. See the example in the figure below:

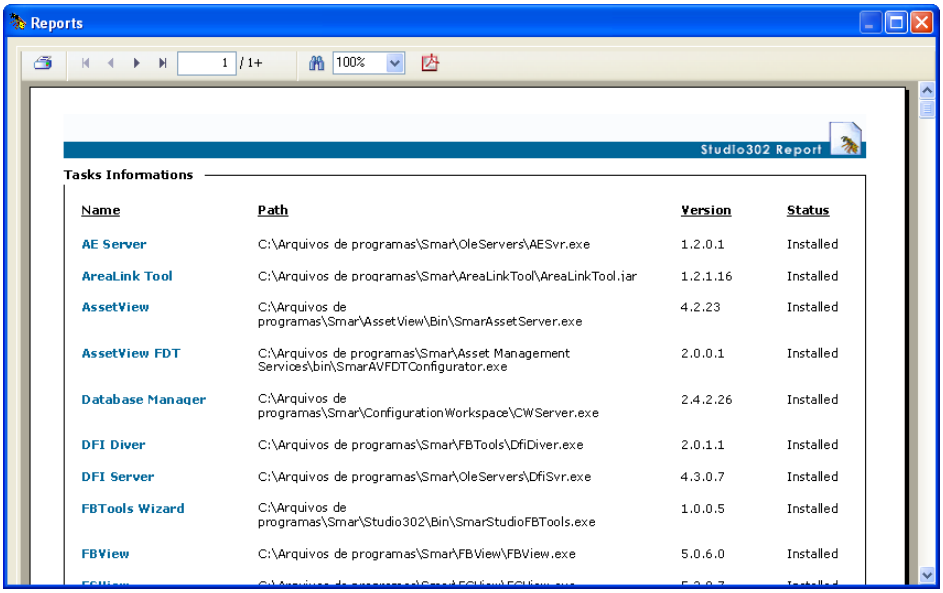


Figure 2.10. Tasks Report

- Process Equipment Database

Click this button to open the **Process Equipment Database** window. See the following figure:

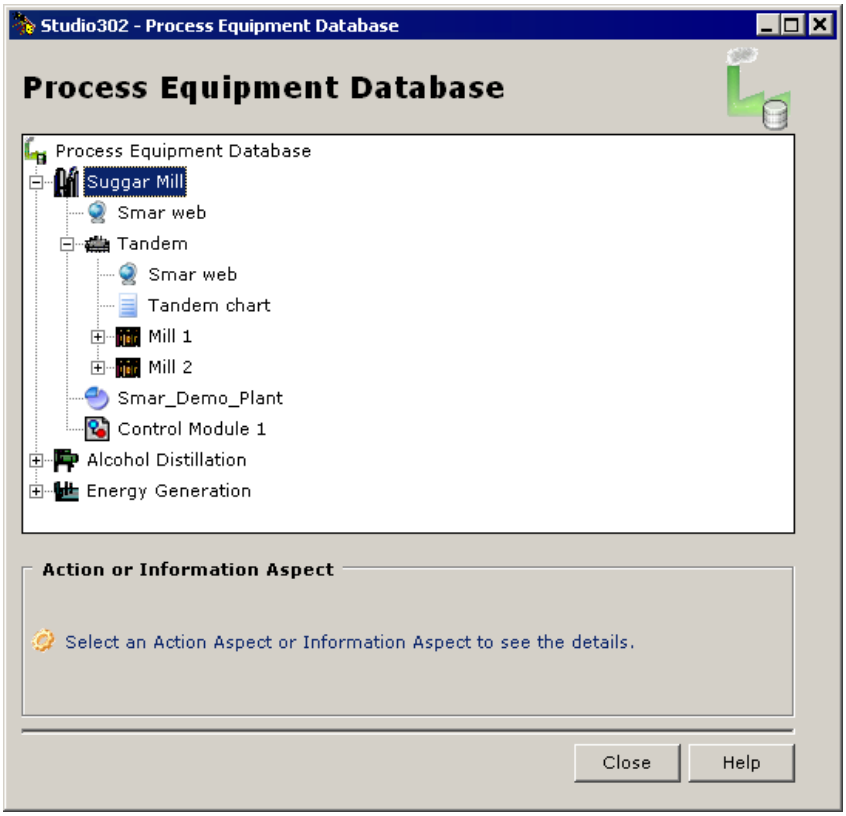


Figure 2.11. Process Equipment Database Window

See section **Process Equipment Database**.

- Pack & Go

Click this button to compact all system information, such as configuration files, block support and device support files, into a single file to be copied to a remote machine.

See section **Pack & Go**.

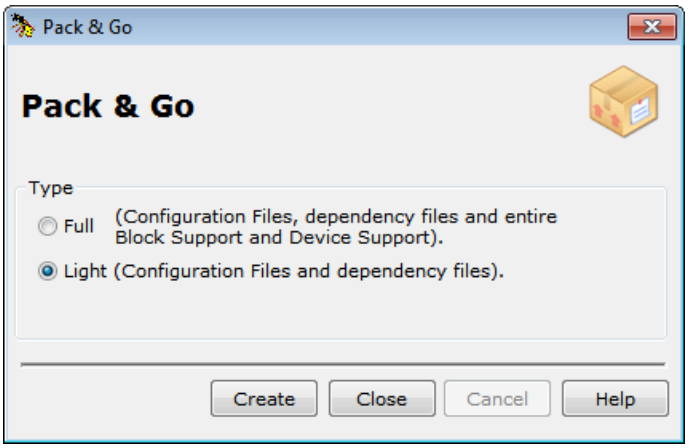


Figure 2.12. Pack & Go Options

- Unpack

Click this button to unpack a compacted file that contains the information about a remote system, which will be copied to a local machine. See section **Unpacking Database Files**.

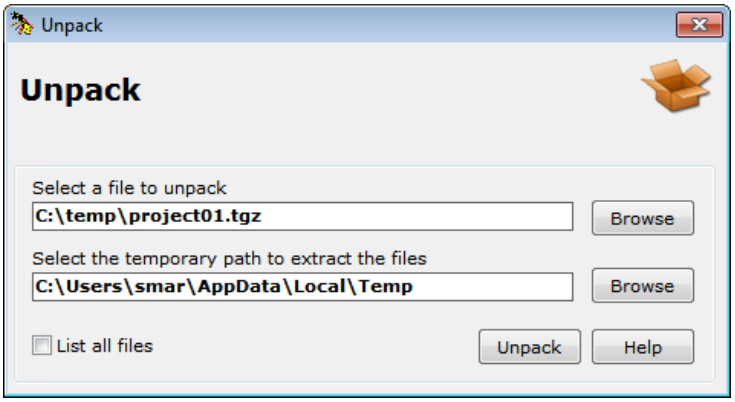


Figure 2.13. Unpacking files

- Diagnostics
Click this button to open the **Diagnostics** window. See section **Diagnostics**.

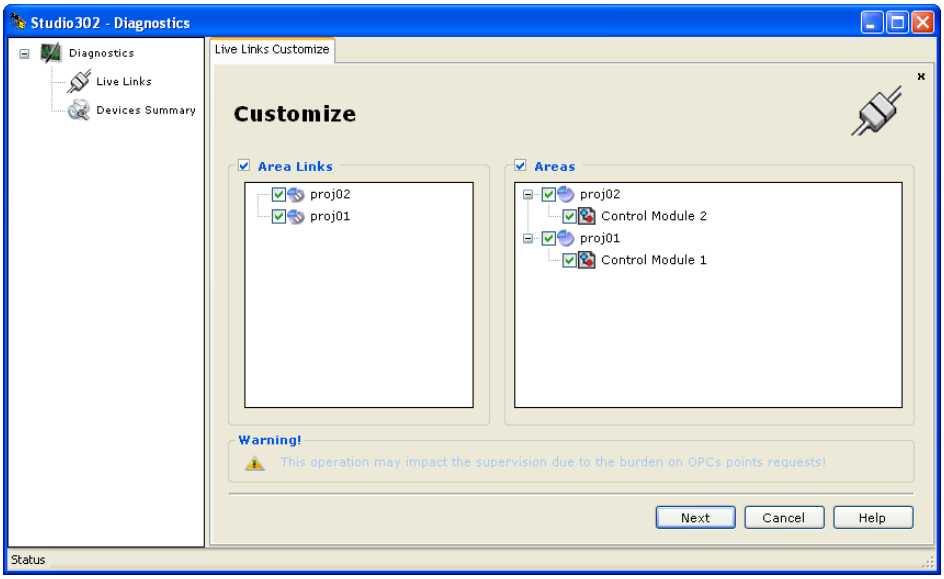


Figure 2.14. Diagnostics Window

- Update All
Click this button to update the information of all configurations saved on the *Database Manager*. This procedure is available in the *Multi-User* mode.

- Online/Offline Communication
Click this button to toggle between the online and offline communication mode. This button also activates the detection service for new devices connected to the communication network.

Tasks toolbar

These buttons are related to the **SYSTEM302** applications. The following list indicates the correspondence with the applications:

- ***Area Link Configuration (Area Link Tool)***
- ***Asset Management (AssetView)***
- ***DFI Diver***
- ***Firmware Download (FBTools Wizard)***
- ***Network Analysis (FBView)***
- ***FDT Hart Configurator (AssetView)***
- ***License Information (LicenseView)***
- ***IEC-61131 Ladder Logic Configuration (LogicView)***
- ***Profibus PA Device Parametrization (ProfibusView)***
- ***ProcessView***
- ***OPC Server Management (Server Manager)***
- ***OPC Tag Visualization (TagView)***
- ***Strategy Configuration (Syscon)***
- ***Strategy Simulation (SimulationView)***
- ***Tag List Generator for DF65 (TagList)***
- ***System302 Documentation***

When you click these buttons, the corresponding application is initialized. **Studio302** does not incorporate the functionality of the application; **Studio302** only initializes the selected application, and each software application is executed apart from the others.

Customizing the Toolbars

You can select the applications that will be initialized from the toolbar. Go the **Settings** menu and select the option **Toolbar**. The dialog box to select the applications will open.

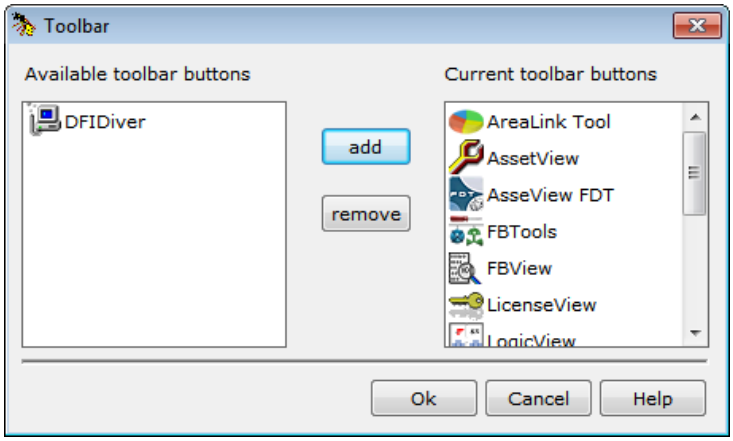


Figure 2.15. Selecting the Studio302 Applications

- To enable the button for an application in the toolbar, select the icon of the application in the **Available toolbar buttons** list and click **Add**.

- To disable the button for an application in the toolbar, select the icon of the application in the **Current toolbar buttons** list and click **Remove**.

If the button for an application is not available in the dialog box showed above, it means that the application was not installed by **SYSTEM302**.

Topology Tree

To open the topology tree, click the button **Show/Hide Topology** , or go to the **File** menu and select the option **Topology**.

To close the topology tree, click the button **Show/Hide Topology** again or go to the **File** menu and unselect the option **Topology**.

You can expand the visualization area hiding the topology tree of **Studio302**.

Click the button **Hide Topology** , and the topology tree will collapse to the left, increasing the visualization area.

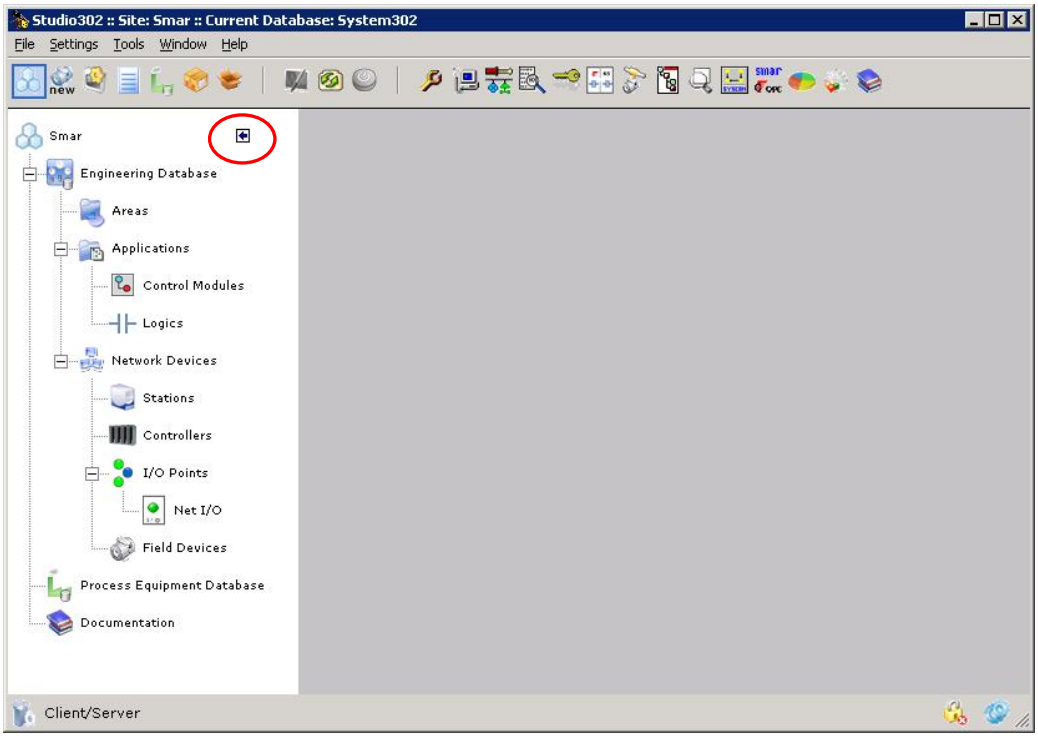


Figure 2.16. Hiding the topology tree

To display the topology tree again, move the mouse cursor over the **SYSTEM302** label. The name displayed on the label of the left panel corresponds to the name of the current Database.

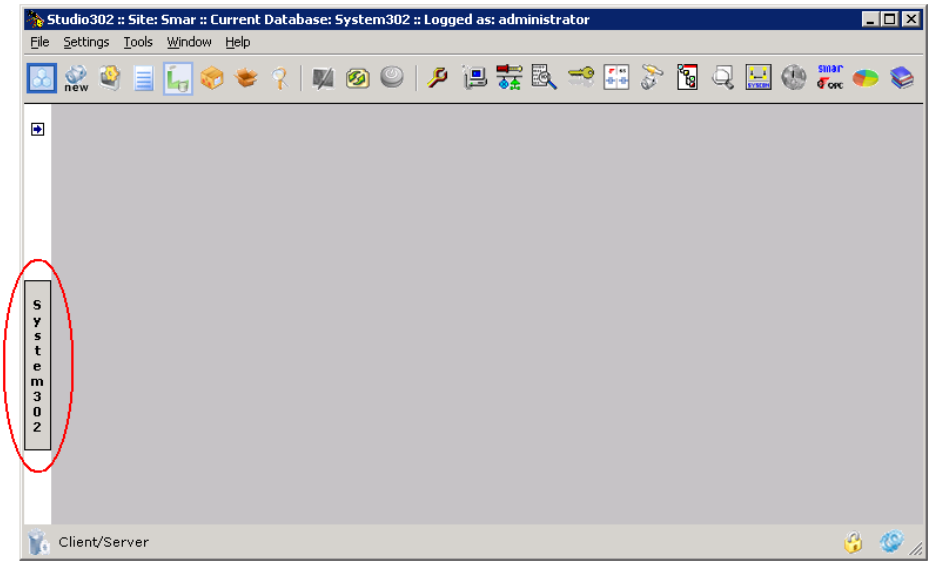

Studio302 :: Site: Smar :: Current Database: System302 :: Logged as: administrator
File Settings Tools Window Help
System302
Client/Server

Figure 2.17. Displaying the topology tree

Defining User's Preferences

On the **File** menu, click the option **Preferences** to configure the user's preferences.

Path to Configurations Removed from the Database

If a configuration is removed from the current Database, the files related to this configuration are moved from the **Studio302** working directory to a directory defined by the user.

In case it is necessary to restore that configuration, import the configuration file again, from the directory defined by the user to the current Database and all files related to the configuration will be restored to the **Studio302** working directory.

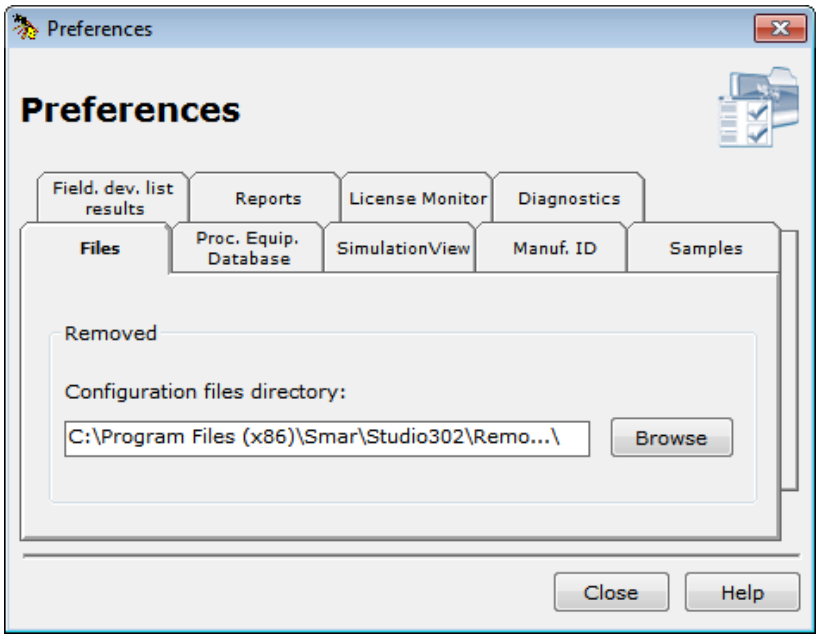


Figure 2.18. Preferences Dialog Box: Files Tab

Click the **Browse** button to open the **Browser** dialog box. Browse the directories to locate the folder, select the folder icon and click **Ok** to conclude.

Process Equipment Database

Define the database of the **Process Equipment Database**.

Click the **Process Equipment Database** button to open the **Data Link Properties** dialog box and select the server. You can also test the connection with the database clicking the **Test Connection** button.

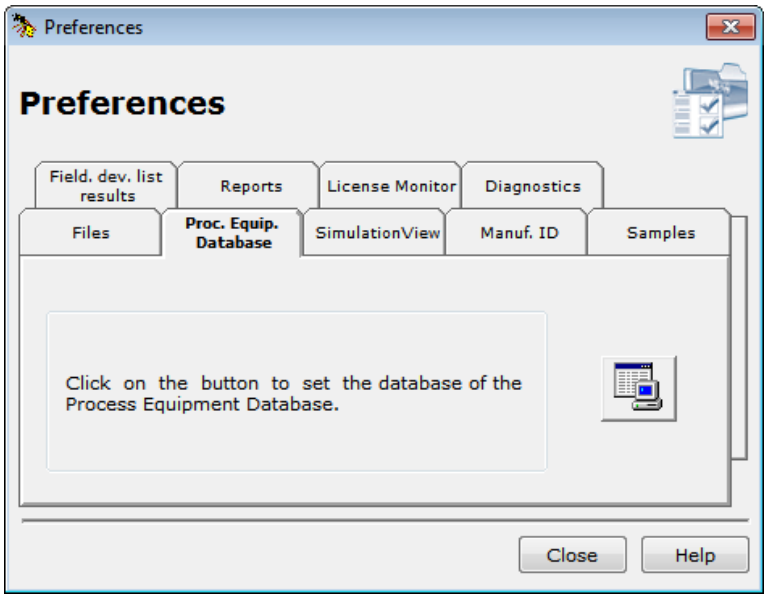


Figure 2.19. Preferences Dialog Box: Process Equipment Database Tab

If you select a remote data server, it will only be possible to view the data information and you will not be allowed to alter the **Process Equipment Database** items. In this case, the **Process Equipment Database** will be operating in **View Mode**.

SimulationView

This option enables the simulation mode of the **SYSTEM302**. For further information, please, refer to the **SimulationView** manual.

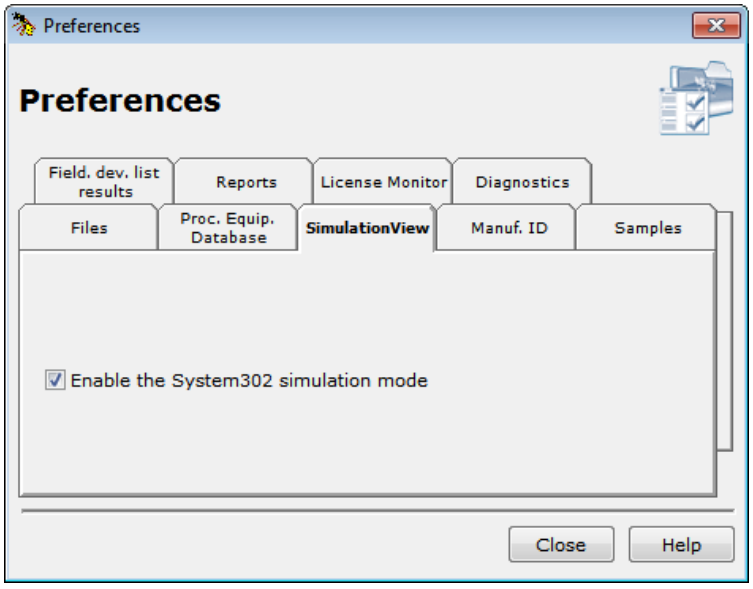


Figure 2.20. Preferences Dialog Box: SimulationView Tab

Manufacturer ID

The *profile numbers* are grouped according to the Manufacturer IDs.

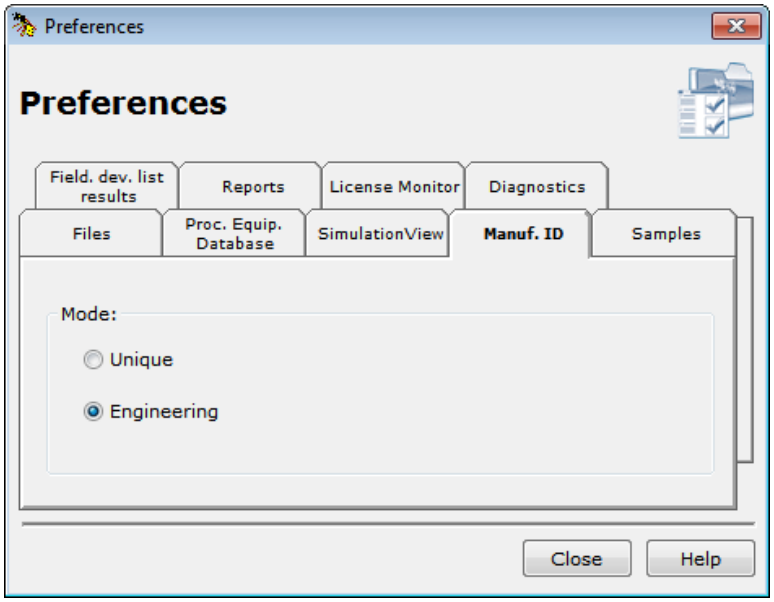


Figure 2.21. Preferences Dialog Box: Manufacturer ID Tab

- **Unique**: select this mode to define a default Manufacturer ID for all databases.
- **Engineering**: select this mode to specify a Manufacturer ID for each database created.

Samples Screen

Check the option **Enable the Studio302 Samples** to open the **Samples Screen** every time the user starts the **Studio302**. If this option is not checked, the **Samples Screen** will not appear.

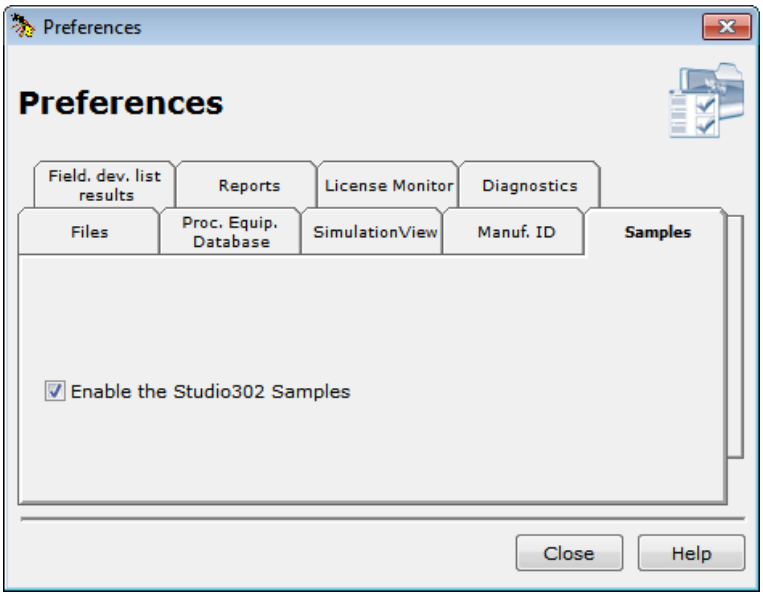


Figure 2.22. Preferences Dialog Box: Samples Tab

See sections **Configuration Samples** and **Process Equipment Database Samples** for details on how to open a **Studio302** Sample.

Field Devices List Results

Check this option to enable the dialog box that displays the status after reading the information related to the devices from each configured OPC Server.

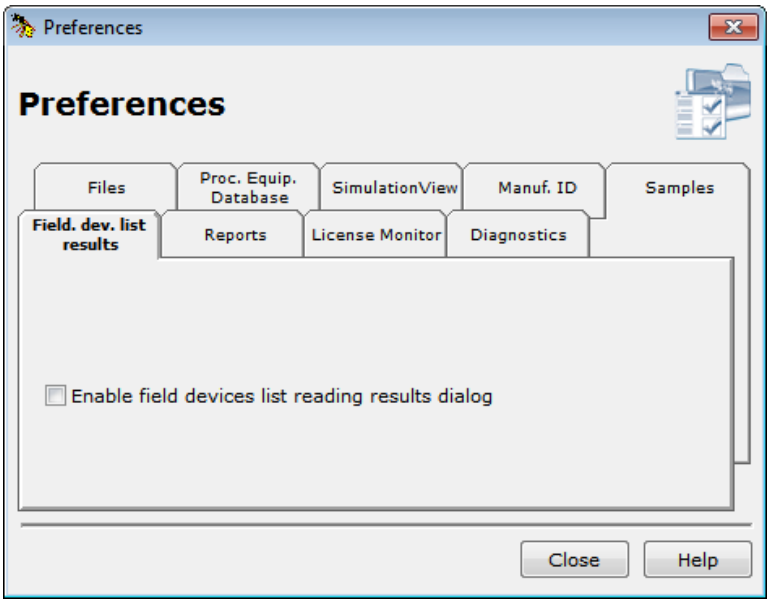


Figure 2.23. Preferences Dialog Box: Field Devices List Results Tab

Reports

Check the option **Generate the Inventory Report when Studio302 is started** to generate that report each time **Studio302** is launched. This report lists all files related to **SYSTEM302** and indicates the hardware characteristics for the local machine (where **SYSTEM302** was installed). This report is generated transparently to the user. You can use the **Backup Wise Inspector** to compare the first and the last inventory report generated.

Check the option **Do not compare image and video files** to skip the comparison of image and videos files when generating a report with **Wise Inspector**. The **Wise Inspector** tool is used by *Smar Tech Support* team to troubleshoot system configurations.

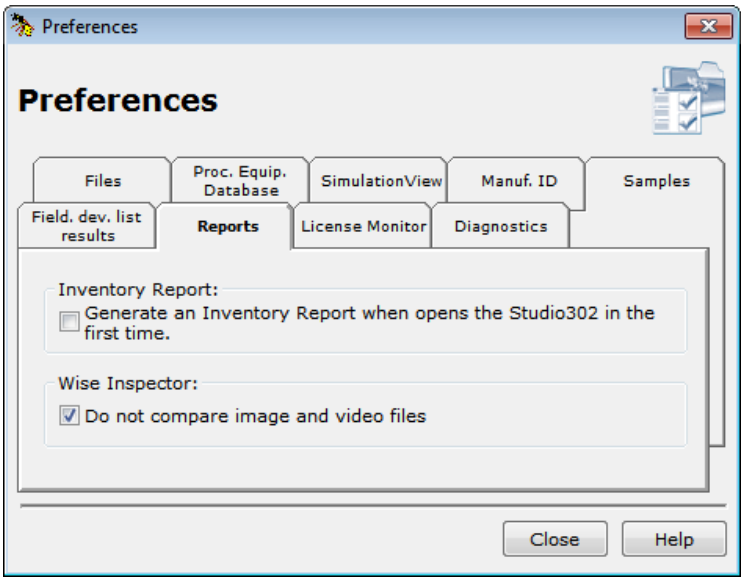


Figure 2.24. Preferences Dialog Box: Reports Tab

License Monitor

The **License Monitor** window shows the number of licensed devices, **Process Equipment Database** items and blocks according to the user's software licenses and periodically checks the number of points being used by the configuration files and the points available for the project configurations.

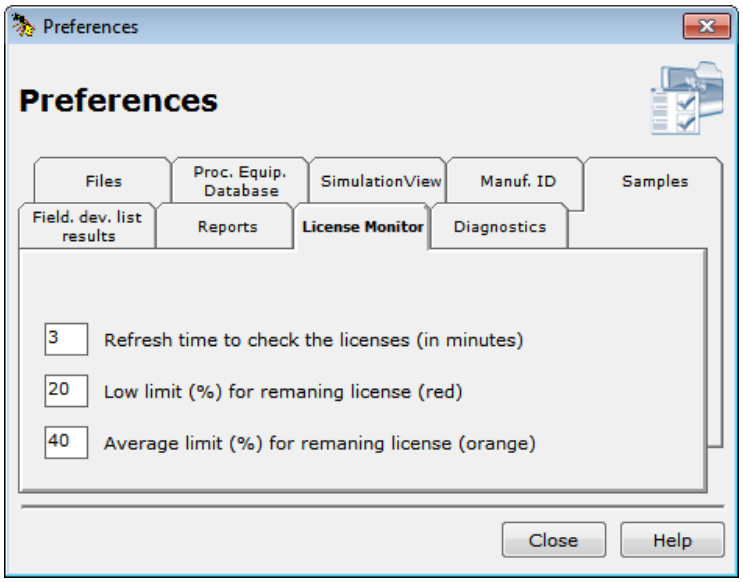


Figure 2.25. Preferences Dialog Box: License Monitor Tab

Refresh Time: set the time interval (in minutes) to refresh the information related to the licenses for the **SYSTEM302** applications in the **License Monitor** dialog box.

Low Limit Percentage: set the minimum percentage of the number of licensed points (devices, items or blocks). If the number of available points is inferior to this percentage, the indicative number will be displayed in red.

Average Limit Percentage: set the average percentage of the number of licensed points (devices, items or blocks). If the number of available points is inferior to this percentage, the indicative number will be displayed in orange.

Diagnostics

From the **Diagnostics** window, open the **Devices Summary** dialog box and monitor instruments with maintenance, diagnostic and tracking events. Also, open the **Live Links** dialog box and periodically check the block links created using **Syscon** and their state.

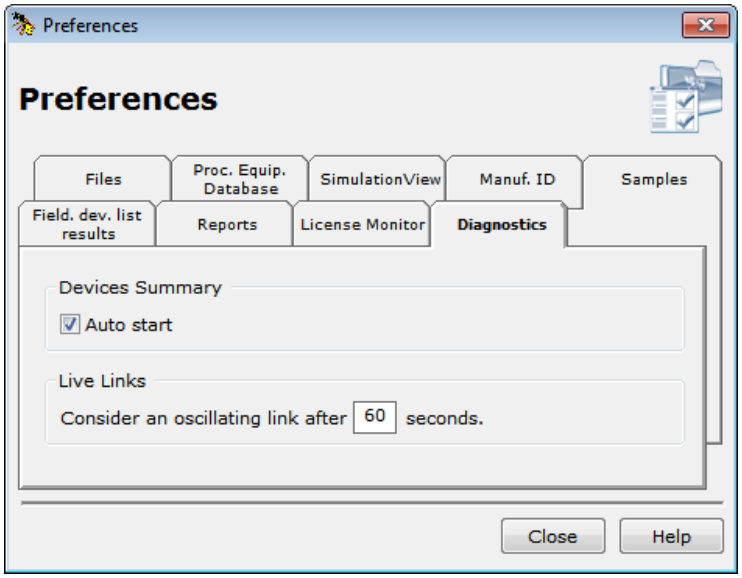


Figure 2.26. Preferences Dialog Box: Diagnostics Tab

Auto Start: mark this option to automatically start monitoring the devices on the **Devices Summary** dialog box.

Consider an oscillating link after ## seconds: set the time interval to wait until stabilizing the reading of the status of each link, before considering the link as oscillating on the **Live Links** dialog box.

CONFIGURING THE COMMUNICATION NETWORK

Communication Settings

To configure the communication in **Studio302**, go to the **Settings** menu and click the option **Communications**.

The **Communication Settings** dialog box will open.

Detect Device

At the **Detect Device** tab, you can set the time interval to detect a device in your communication network.

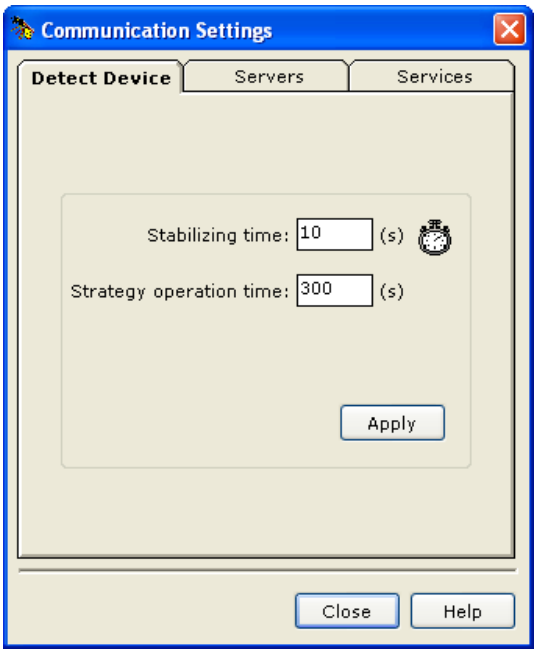


Figure 3.1. Communication Settings Dialog Box: Detect Device Tab

- **Stabilizing Time:** Set the time interval, in seconds, that the server will wait until the device is stable in the network, before alerting the user the device was detected.
- **Strategy Operation Time:** Set the time interval, in seconds that the server will wait while the device is commissioned or decommissioned. After this interval, if the device does not conclude the operation, all events sent by the device will be discarded.

Click **Apply** to confirm the configuration and apply the changes.

Servers

At the **Servers** tab, you can configure the communication server.

If the **Local** server is selected, choose the Server ID from the list and click the **Add to list** button to include this server to the list of selected servers. To remove a server from the list of selected servers, select the icon of the server and click **Remove**.

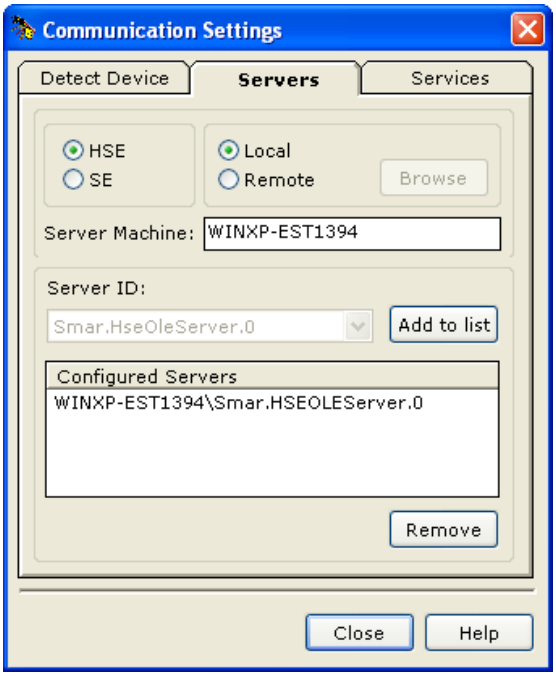


Figure 3.2. Communication Settings Dialog Box: Servers Tab

If the **Remote** server is selected, click the **Browse** button to locate the server machine. The **Browser Network** dialog box will open. Select the icon of the target machine and click **Ok**.

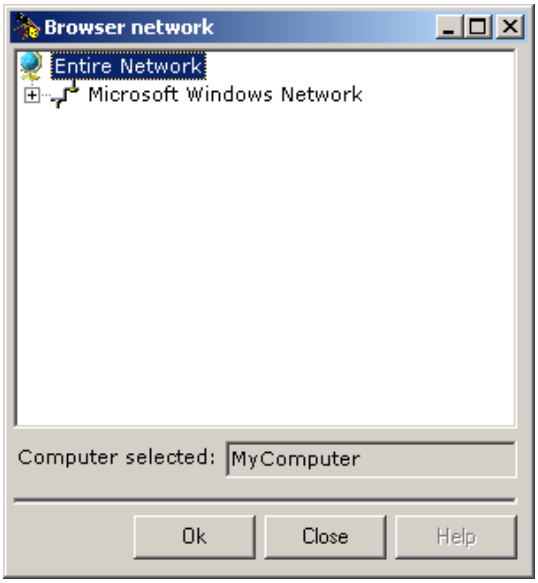


Figure 3.3. Browser Network dialog box

Services

At the **Services** tab, you can alter the initialization mode for the device detection service.

Figure 3.4. Communication Settings Dialog Box: Services Tab

Click the button **Start** to initialize the service manually. To stop the service, click the button **Stop**.

When the detection service is active, the **Studio302** icon appears in the Windows taskbar, as indicated in the figure below:

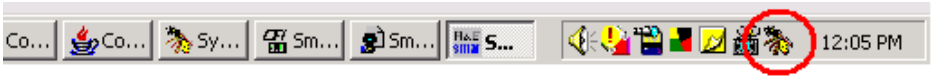


Figure 3.5. Detecting New Devices

The device detection service is also active when you start the communication clicking the **Online/Offline Communication** button, .

Server Manager Settings

Click the button to execute the **ServerManager**.

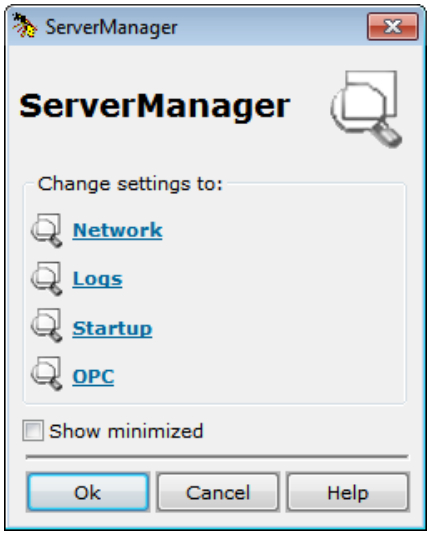


Figure 3.6. Configuring the ServerManager

Network Settings

Click the link **Network** to configure the *Network Interface Cards* used by the **ServerManager**:

- At the **General** tab, configure the number of NICs (Network Interface Cards) and the IP addresses.
- At the **HSE Redundancy** tab, configure the Device and LAN redundancy.
- At the **Advanced** tab, configure the synchronization and the schedule for the supervisory.
- The **HSE Maintenance** tab is only available for users with *Administrator* rights and allows the administrator to delete the files related to the HSE persistency.
- At the **SNTP** tab, configure the *Application Clock Time*. This option is used to configure the parameters related to the time synchronism.
- The **RTU** tab must be configured only if the application uses remote access. Through this tab, the RTU mode is enabled or disabled, and the necessary parameters are configured for proper operation.

Log Settings

Click the link **Logs** to configure the options to enable or disable the log messages.

Startup Settings

Click the link **Startup** to configure the **ServerManager** to automatically start the OPC servers when the operating system is starting up.

When an OPC server is active, the icon of the **ServerManager** will change to green ( ) on the Windows taskbar.

If the server is stopped, the icon of the **ServerManager** will change to red ( ) on the Windows taskbar.

Refer to the tutorial **Network Settings** for further information on how to configure the network servers.

OPC Settings

Click the link **OPC** to configure the options related to the Smar's OPC Servers:

- At the **SNMP** tab, configure the list of available agents and their supervision settings.
- At the **A&E** tab, create the database with the initial conditions for the *Smar A&E OPC Server* to identify which events will be monitored.
- At the **HDA** tab, configure the options to execute maintenance on the database related to the Smar's *Historical Data Access Server*.
- The **UA** tab provides access to the *wrapper* that provides the HSE Server for the UA standard.

USING STUDIO302

Defining the Site Name

To define a new name for the site, click the first topic in the topology tree. For example:

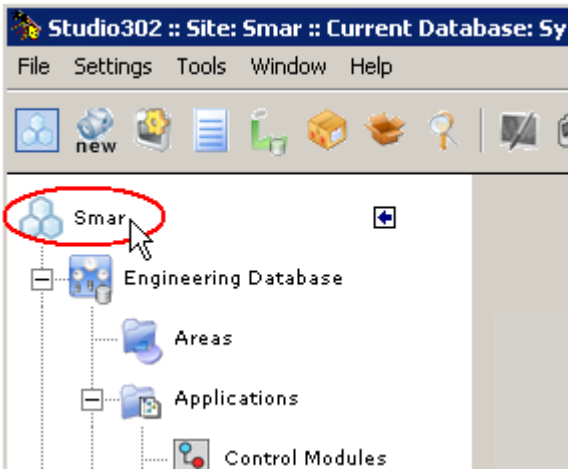


Figure 4.1. Defining the Site Name

The **Site** dialog box will open. Type the new name and click **Ok** to conclude.

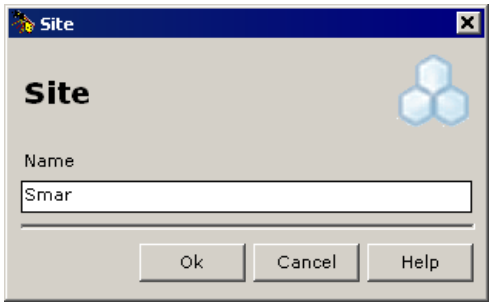


Figure 4.2. Type the new Site Name

Database

Database functionally corresponds to the **Studio302** workspace that groups the configuration data of the plant (logic, control modules, equipment, etc.). The information is stored in the file with the extension **.scw*.

Click the button **Database** in the main toolbar to display the Database information. The **Database** dialog box will open:

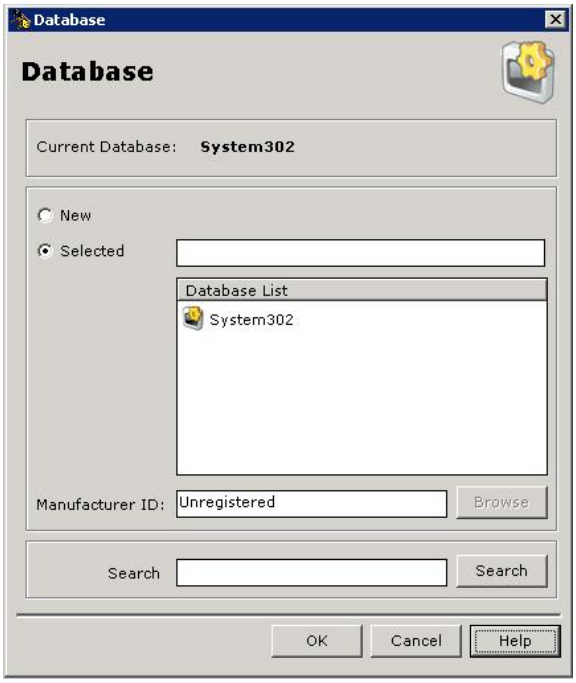


Figure 4.3. Database dialog box

The field **Current Database** indicates the name of the current Database.

Creating a Database

A database can only be created in the **Client/Server** mode, when the **Database Manager** is being executed.

If the **Database Manager** is not running, close the **Studio302** application, then start the *Database Manager* application and ***Studio302*** again.

The **Database Manager** is installed in the **Startup** menu and initialized with the operating system by default. To run the **Database Manager**, click **Start > All Programs > Startup > Database Manager**.

In the **Database** dialog box:

1. Select the option **New** and type the name for the new Database in the text field. The files for all Databases are created in the **Studio302** default path *C:\Program Files\Smar\ConfigurationWorkspace\Client\CWFiles*.

2. In the **Manufacturer ID** box, click **Browse** to open the **ManufacturerID** dialog box. Select the **All** tab and click the name related to the desired Manufacturer ID. The profile numbers related to the selected Manufacturer ID will be used in the new Database. Click **Ok** to return to the **Database** dialog box.

3. In the **Database** dialog box, click **Ok** to create the Database. A message box will open confirming the operation. Click **Ok** to conclude and the Database will be displayed in the **Studio302** window.

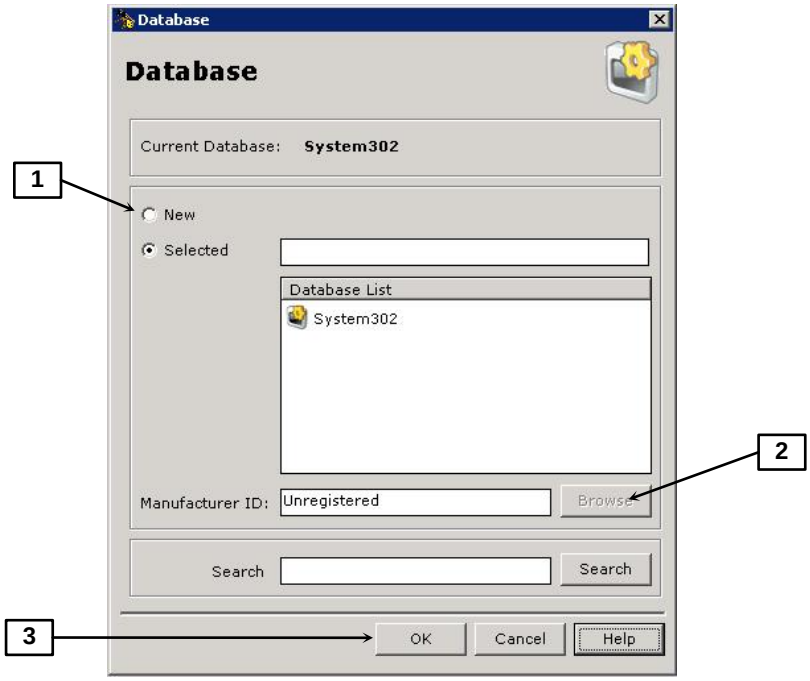


Figure 4.4. Creating a Database

Changing the Current Database

To change the Database displayed in the **Studio302** window, open the **Database** dialog box clicking the button and select the icon corresponding to the desired Database.

Click **Ok** and the message box will open to confirm the operation.

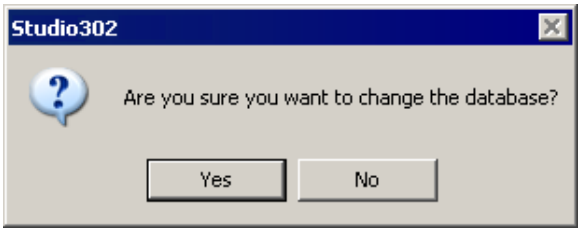


Figure 4.5. Changing the Current Database

Click **Yes** to conclude and change the Database. A message will appear to confirm the operation.

Importing Syscon Files to the Database

To import an existent configuration file to the current Database, go to the **File** menu, select **Import** and click **Syscon file**. The dialog box to import the configuration file will open.

Browse the directories to locate the configuration file. Select the file icon and click **Open** to import the configuration.

The **Syscon** window will open while the configuration is added to the **Studio302**.

A message box will open informing the user that the configuration was imported by **Studio302**, indicating the corresponding Database.

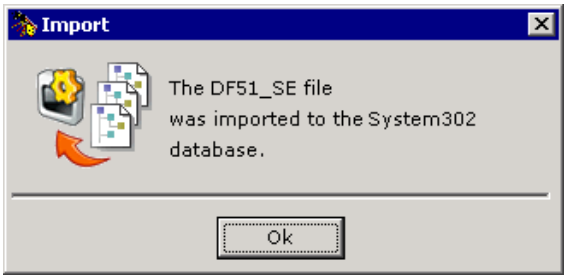


Figure 4.6. Importing Files

Click **Ok** to close the message box and return to the Database.

To list all the configurations included in a Database, click the icon **Areas** in the topology tree, and the list of the configurations will be displayed. In the **Areas** dialog box, double-click the project icon to open the configuration in the **Syscon** application.

IMPORTANT
The **Database Manager** manages all configuration files, and the configurations created using **Syscon** are saved in a common storage directory where all machines connected to the communication network can access those files. It is important to have a common practice to name tags in your company, to avoid consistency problems. For example, in *Multi-user* mode, if *User A* creates a configuration in a machine with the same name that *User B* created the configuration in another machine, one of the configuration files will be deleted and overlaid by the other file, when the configurations are committed. Likewise, it will not be possible to import a project configuration that contains the same tag for two or more control modules (or devices, blocks, etc) of another project configuration file already included in the Database.

Areas

Click the **Areas** icon in the topology tree to open the **Area** dialog box. The **Areas** dialog box will show all the configurations imported from the **Syscon** files to the Database.

	The file is located in the local machine.
	The file is located in the local machine and it is being edited.
	The file is located in the server machine.
	The file is located in the server machine and it is being edited.
	The file is located in the server machine and it is being edited by another user.
	The project configuration created using a previous **SYSTEM302** version must be upgraded to **SYSTEM302 version 7.2.x** or higher. Right-click the area icon and select the option **Upgrade**.
	The file located in the server machine contains the most recent alterations for the configuration file. Right-click the area icon and select the option **Update** to update the project configuration.

Right-click the area icon and click **Multiuser Details** to open the **Multi User Details** dialog box. This dialog box indicates the status of the configuration file, whether it is being edited in the local machine or locked for edition by another user, for example.

Creating an Area

In the **Areas** dialog box, right-click the dialog box and click **New Area**.

Studio302 will launch **Syscon** and open the dialog box that lists the templates available for each *linking device*. Select the desired template and click **Ok**. Type the name of the strategy configuration and click **Ok** to conclude.

Creating a Hart Area

In the **Areas** dialog box, right-click the dialog box and click **New Hart Area**.

Studio302 will launch the **FDT Hart** tool. In the dialog box, type the name of the topology and click **Ok**. The Topology window will open for edition.

Opening the Area in View Mode

ATTENTION
Right-click the area icon and click **Update** to update the local information about the configuration project before opening the file. This option is only available after the area had been commissioned.

Right-click the area icon, in the **Areas** dialog box, and click **View**. **Studio302** will launch **Syscon** and open the configuration file corresponding to the selected area in **View Mode**.

If the configuration file is being edited in other machine, the user will not be able to alter or edit this configuration. On the other hand, if the file is not being edited, click the **Edit Mode** button in **Syscon** to switch modes and alter the configuration file.

Editing the Area

ATTENTION
Right-click the area icon and click **Update** to update the local information about the configuration project before editing the file. This option is only available after the area had been commissioned.

Right-click the area icon in the **Areas** dialog box and click **Edit Area**. **Studio302** will launch **Syscon** and open the configuration file corresponding to the selected area.

Refer to the **Syscon User's Manual** for details on how to edit the configuration.

Exporting an Area for Standalone Mode

When you export an area to the **Standalone** mode, the area is removed from the database and the configuration files related to the area are saved in a target directory.

Right-click the area icon in the **Areas** dialog box and click **Export for Standalone**. The **Browse for Folder** dialog box will open. Select the path to the directory where the configuration files will be exported. Click **Ok** to conclude.

Removing an Area

To remove an area from the database, right-click the area icon in the **Areas** dialog box and click **Remove Area**.

It is only possible to remove an area created in a local configuration file, that is, a file stored in the local machine.

NOTE
If the **Syscon** application is being executed, it will be necessary to close **Syscon** before removing the area.

Replacing an Area

To replace an area in the database, right-click the area icon in the **Areas** dialog box and click **Replace Area**. The **Replace** dialog box will open. Type the path to the new area or click the **Browse** button to locate the *.ffp file that contains the new area.

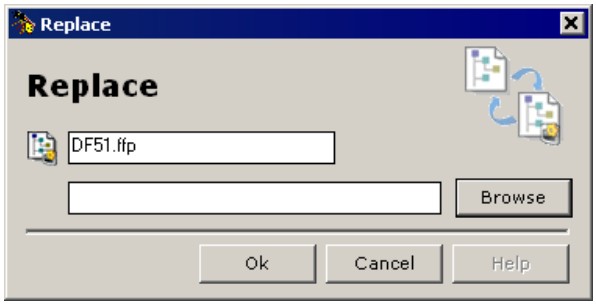


Figure 4.7. Replacing an Area

Click **Ok** to conclude. **Studio302** will automatically launch **Syscon** to import the new area.

Searching Areas

To search an area by name, type its name on **Search** field and click **Search by Name**.

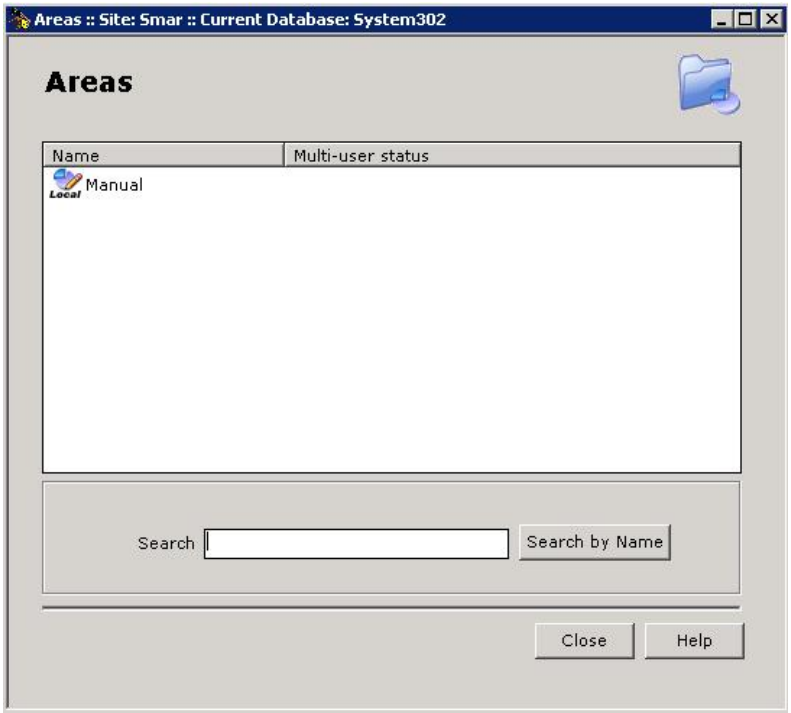


Figure 4.8. Searching Areas

HINT
The wild char '*' (asterisk) can be used to replace one or several characters. The asterisk may be placed anywhere in a search string, and the string may include several asterisks. The "?" (Question mark) can be also used as a wild char.

Control Modules

To open the list of all control modules in the Database, expand the icon **Applications** and click **Control Modules** in the topology tree.

The **Control Modules** dialog box will open. This dialog box lists the control modules related to the configurations created using **Syscon**, and then imported to the current Database.

	The file containing the control module is located in the local machine.
	The file containing the control module is located in the local machine and it is being edited.
	The file containing the control module is located in the server machine.
	The file containing the control module is located in the server machine and it is being edited.
	The file containing the control module is located in the server machine and it is being edited by another user.

Right-click the control module icon and click **Edit control module** to open the corresponding configuration in **Syscon** and edit the **Strategy** window.

If the configuration file is being edited in other machine, the user will not be able to alter or edit this configuration. Right-click the control module icon and click **View** to open **Syscon** in **View** mode and visualize the **Strategy** window.

Searching Control Modules

To search the name of the control module, select the option **Control Module** at the bottom of the **Control Modules** dialog box, type the name of the control module and click **Search by Control Module**.

To search the name of the area, select the option **Area** at the bottom of the **Control Modules** dialog box, type the name of the area and click **Search by Area**.

HINT
The wild char '*' (asterisk) can be used to replace one or several characters. The asterisk may be placed anywhere in a search string, and the string may include several asterisks. The "?" (Question mark) can be also used as a wild char.

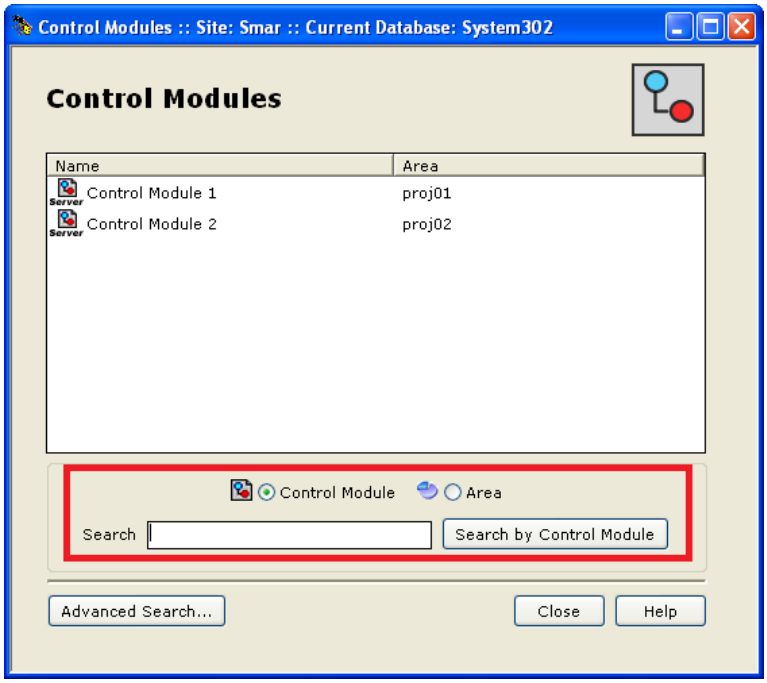


Figure 4.9. Searching Control Modules

Advanced Search

Click **Advanced Search** at the bottom of the **Control Modules** dialog box. Use the **Advanced Search** dialog box to find the items that match the two criteria.

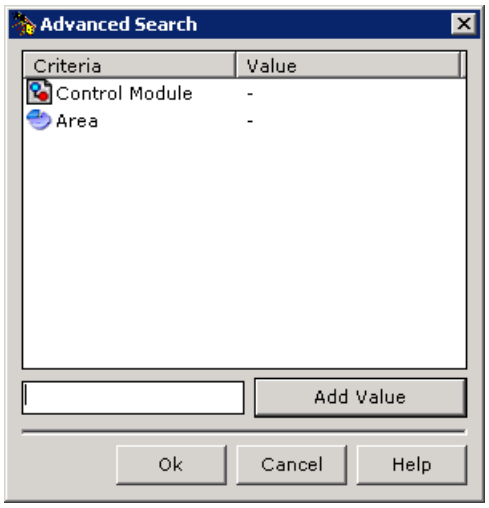


Figure 4.10. Advanced Search

Type the word to be searched on the text box, click the criteria icon to select it and click the button **Add <Value>**. See the example below:

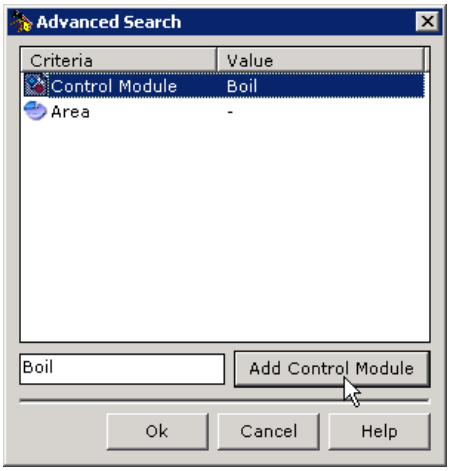


Figure 4.11. Defining Search Criteria

Repeat the steps above to add other criteria.

To delete the value from one criterion, right-click the value and click the option **Delete**. To delete all values from the **Advanced Search** dialog box, right-click the dialog box area and click the option **Delete All**.

Logics

Expand the icon **Applications** and click **Logics** in the topology tree to open the list of all logics in the *Database*.

The **Logics** dialog box will open. Each control logic is related to an Area, indicated in the **Area** column. The **Type** column indicates whether the configuration is a logic configuration or a logic template.

Local	The file containing the control logic is located in the local machine.
Local	The file containing the control logic is located in the local machine and it is being edited.
Server	The file containing the control logic is located in the server machine.
Server	The file containing the control logic is located in the server machine and it is being edited.
Server	The file containing the control logic is located in the server machine and it is being edited by another user.
Server	The file located in the server machine contains the most recent alterations for the control logic. Right-click the logic icon and select the option **Update** to update the logic configuration file.

Right-click the logic icon and click **Multiuser Details** to open the **Details** dialog box. This dialog box indicates the status of the logic configuration file, whether it is being edited in the local machine or locked for edition by another user, for example.

At the bottom of the **Logics** dialog box, mark the option **Logic** to list all logic configurations, and mark the option **Logic Template** to list all templates. If one of the options is unmarked, the corresponding type of logic will not be displayed on the **Logics** dialog box.

Viewing and Editing the Control Logic

The **Database Manager** manages the alterations made to the logic configuration file. Using **Studio302** in multi-user mode, it is necessary to commit the alterations after editing the logic.

If the logic is not being edited by any user, the option **Edit Logic** will be available when right-clicking the logic icon. **LogicView for FFB** will open the corresponding configuration to edit the control logic. Refer to the **LogicView for FFB Manual** for details on how to edit the logic.

ATTENTION
Right-click the logic icon and click **Update Logic** to update the local information related to the logic before editing the logic configuration file. This option is only available after the area/logic has been commissioned.

After you finished editing the logic, right-click the logic icon and click the option **Commit Logic**. The alterations will be saved to the **Database Manager** and other users will be able to edit the logic configuration.

When the logic configuration is being edited by another user, right-click the logic icon and click **View Logic** to open the configuration file on **View Mode** using **LogicView for FFB**.

Defining Parameters

Right-click the logic icon and click **Define Parameters**. **Studio302** will automatically launch **Syscon** and open the **FFB Parameters Definition** dialog box.

Edit the parameters, if necessary, and click **Ok** to return to the **Studio302**.

Refer to the **Syscon User's Manual** for details on how to edit the parameters.

Creating Logic Templates

To create a logic template, right-click the **Logics** dialog box and click the option **New Logic Template**. Using **LogicView for FFB**, type the tag for the new logic configuration, click **Ok** and edit the logic template.

Refer to the **LogicView for FFB User's Manual** for details on how to edit the logic.

Close **LogicView** and return to **Studio302**. The new logic template is displayed on the **Logics** dialog box.

Searching Logic Blocks

Right-click the logic icon and click **Search Logic Block**. The **Logic Block Search** dialog box will open. Double-click the icon corresponding to the logic where the block is located to open and edit the strategy configuration.

To search the location, type the name on the **Search** text box and click the button **Search**.

HINT
The wild char '*' (asterisk) can be used to replace one or several characters. The asterisk may be placed anywhere in a search string, and the string may include several asterisks. The "?" (Question mark) can be also used as a wild char.

Searching Logics

To search the name of the logic, select the option **Logic** at the bottom of the **Logics** dialog box, type the name of the logic and click **Search by Name**. The logic templates can also be searched selecting the **Logic Template** option.

To search the name of the area, select the option **Area** at the bottom of the **Logics** dialog box, type the name of the area and click **Search by Area**.

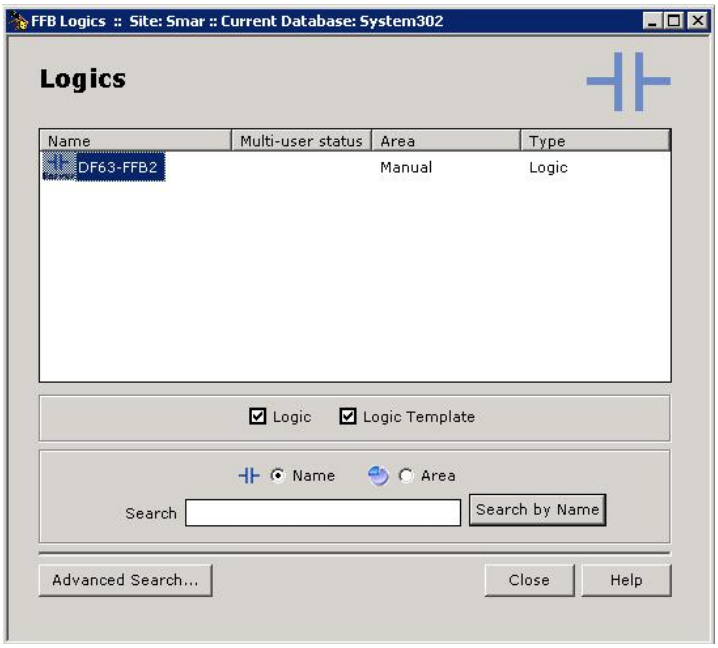


Figure 4.12. Searching Logics

HINT
The wild char '*' (asterisk) can be used to replace one or several characters. The asterisk may be placed anywhere in a search string, and the string may include several asterisks. The "?" (Question mark) can be also used as a wild char.

Advanced Search

Click **Advanced Search** at the bottom of the **Logics** dialog box. Use the **Advanced Search** dialog box to find the items that match the two criteria.

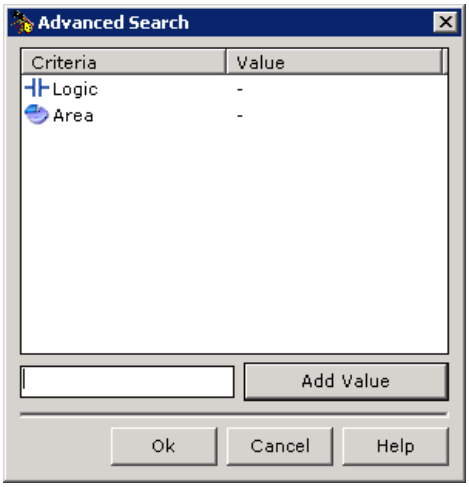


Figure 4.13. Advanced Search

Type the word to be searched on the text box, click the criteria icon to select it and click the button **Add <Value>**. See the example below:

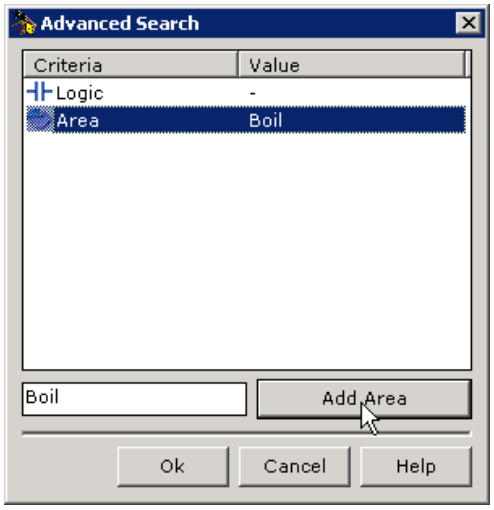


Figure 4.14. Defining Search Criteria

Repeat the steps above to add other criteria.

To delete the value from one criterion, right-click the value and click the option **Delete**. To delete all values from the **Advanced Search** dialog box, right-click the dialog box area and click the option **Delete All**.

Stations

To open the list of all workstations connected to the same database, expand the icon **Network Devices** and click **Stations** in the topology tree. The **Network Devices - Stations** dialog box opens.

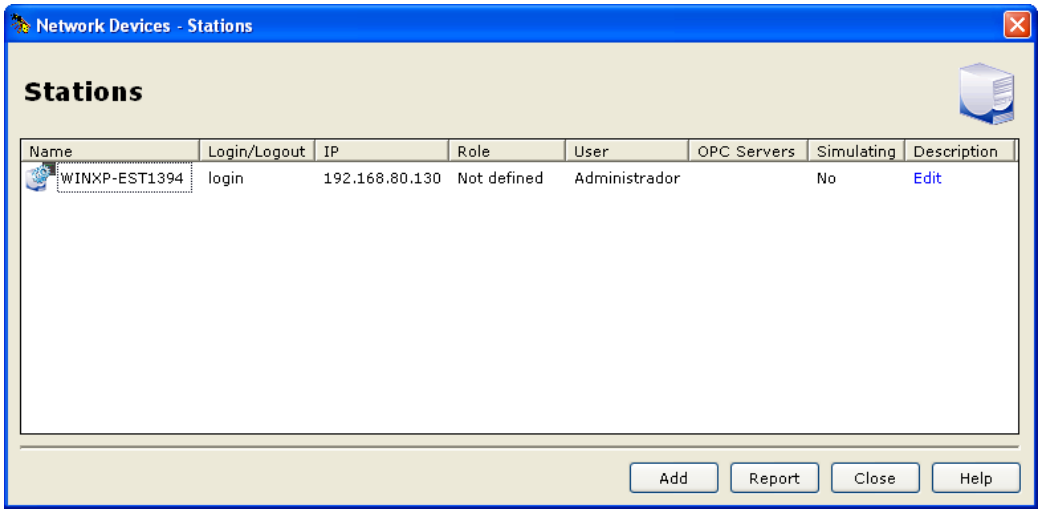


Figure 4.15. Stations

This dialog box indicates the name of the workstations, IP addresses, the workstation role and detailed descriptions. In a multi-user system, a workstation can be classified in two types: Client or Client-Server. There can only be **one** Client-Server workstation and one or many **Client** stations in a multi-user system.

	The Client-Server workstation is not connected to the multi-user system.
	The Client-Server workstation is connected to the multi-user system.
	The Client workstation is not connected to the multi-user system. This status is usually indicated right after the workstation is added to the multi-user system, using the **Network Devices - Stations** dialog box.
	The Client workstation is connected to the multi-user system.
	The Client workstation is not publishing its active status in the multi-user system. This may occur because the communication between Client workstation and the Client-Server workstation is interrupted.

Right-click the workstation icon and click the option **Multiuser information** to open the dialog box that indicates which areas and logics are being edited in the selected workstation.

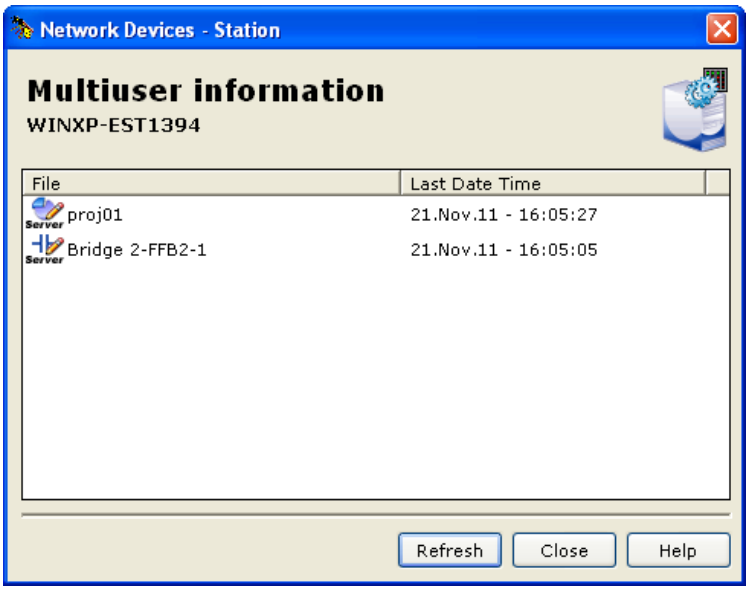


Figure 4.16. Multiuser information

Editing Station Information

On the **Description** column, click **Edit** to include information related to the workstation, such as the workstation role and a brief description. If the information has already been included for the workstation, the **Description** column will indicate the option **Details**.

Clicking **Edit** or **Details**, the **Network Devices – Stations Information** dialog box opens.

Figure 4.17. Station Description

On the **Role** box, select the role that the workstation represents on the current database. On the **Description** box, type a brief description of the workstation.

Click **Update** to confirm the alterations and return to the **Network Devices – Stations** dialog box.

Adding Stations

On the **Network Devices – Stations** dialog box, click **Add** to include a workstation to the database. The **New Station** dialog box opens.

Figure 4.18. Adding a Station

On the **IP** box, type the IP address of the new workstation and click **Validate**. If the IP address is correct, a green check mark will indicate the workstation was located.

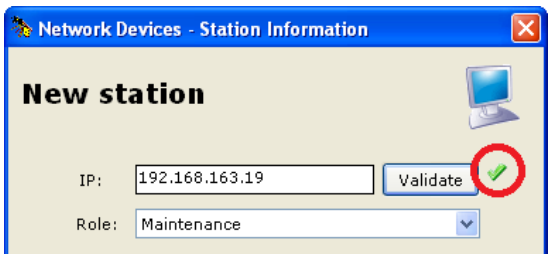


Figure 4.19. New Station

On the **Role** box, select the role that the workstation represents on the current database. On the **Description** box, type a brief description of the workstation.

Click **Save** to conclude and return to the **Network Devices – Stations** dialog box.

Multiuser Information

Right-click the workstation icon and click the option **Multiuser information** to open the dialog box that indicates which areas and logics are being edited in the selected workstation.

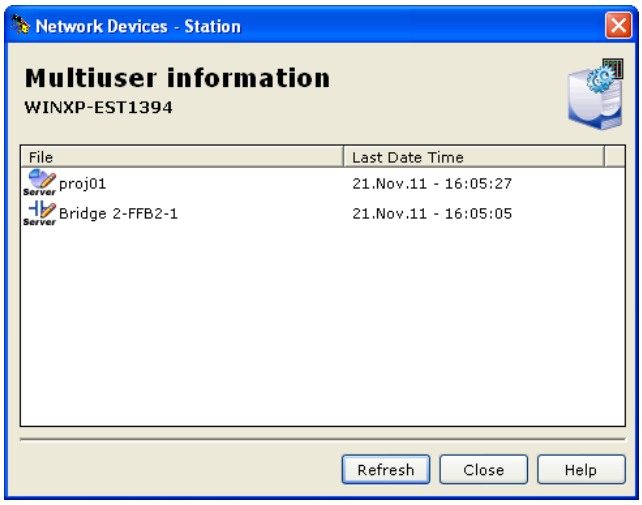


Figure 4.20. Multiuser information

This dialog box indicates the names of the areas or logics in **Edit** mode, and the date and time of the last access.

Click the **Refresh** button to update the information on the dialog box. Click **Close** to return to the **Network Devices – Stations** dialog box.

Generating Reports

On the **Network Devices – Stations** dialog box, click **Report** to generate a report listing all workstations connected to the database, and the information related to each workstation, such as the IP address and role, and also the physical workstation specification, for example, PC processor and RAM memory.

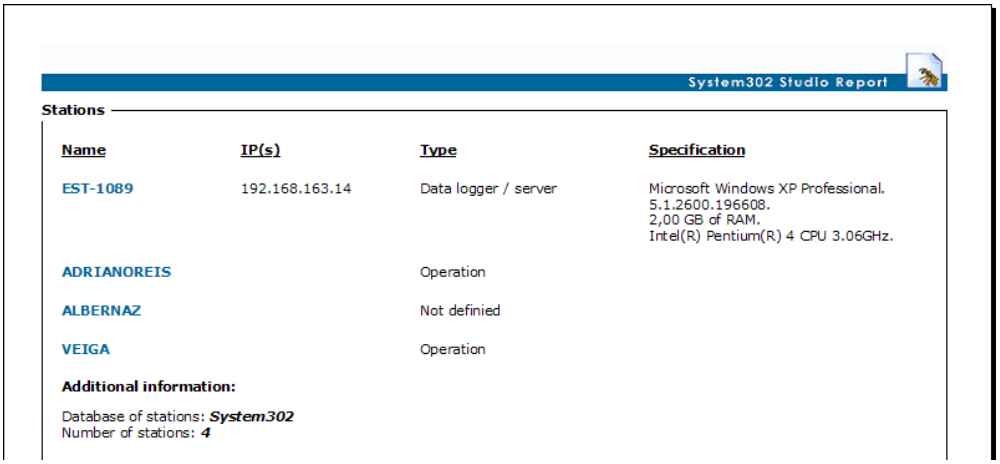


Figure 4.21. Reports

On the **Reports** dialog box, click to print the Stations report. Or click to export the report to a PDF file.

Controllers

The **Network Devices – Controllers** dialog box lists the bridges and controllers from all areas created in the current *Database*.

To open this dialog box, expand the icon **Network Devices** and click **Controllers** in the topology tree.

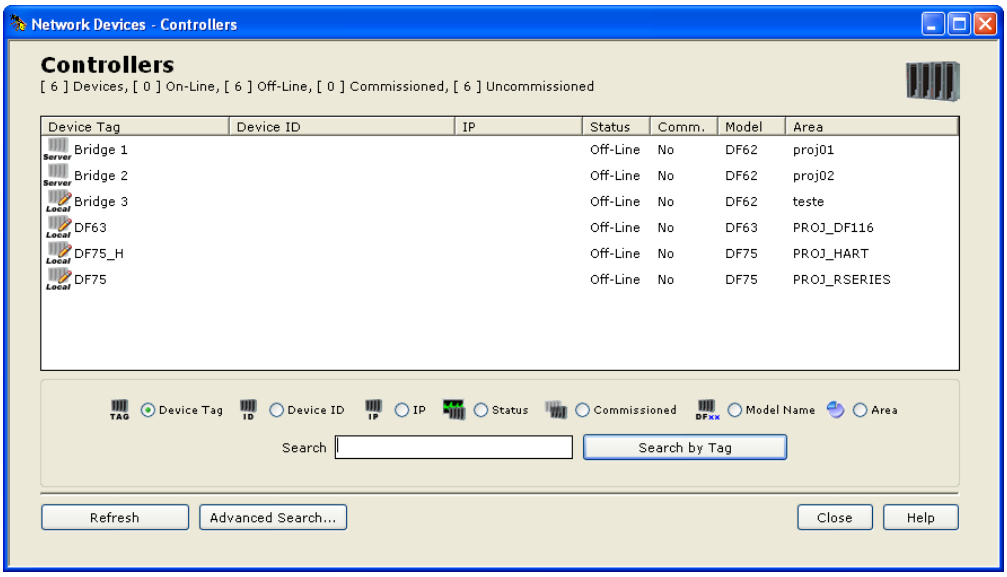


Figure 4.22. Controllers

Configuring the Controller

On the **Network Devices – Controllers** dialog box, right-click the controller icon and click the option **Configuration**.

Syscon will open the configuration that contains the selected controller. Refer to the **Syscon Help** for details on configuring a controller.

Commissioning the Controller

On the **Network Devices – Controllers** dialog box, right-click the controller icon and select the option **Commission**. **Syscon** will open the configuration that contains the selected controller.

In the **Commission** dialog box, click the button to select the controller ID.

The **Device Selection** dialog box will open. Select the icon of the controller ID and click **Ok** to conclude.

Refer to the **Syscon Help** for details on commissioning a controller.

Decommissioning the Controller

You can remove the controller from the process control after the controller has been commissioned. Right-click the icon of the controller to be decommissioned and select the option **Decommission**.

Syscon will be executed, and the controller will be removed from the process control.

Refer to the **Syscon Help** for details on decommissioning a controller.

Downloading the Controller

You can download the controller configuration right-clicking the controller icon and selecting the option **Download**.

The download is executed using **Syscon**. Refer to the **Syscon Help** or the **Syscon User's Manual** for details on downloading the configuration to the controller.

Managing Controllers

Using the **AssetView** pages, you can manage the controller's maintenances and diagnostics. Right-click the controller icon and select the desired page.

Note that:

- The *Configuration*, *Calibration*, *Diagnostic*, *Identification*, *Maintenance*, *Monitoring*, *Display* or *DeviceView* pages will be available in the controller's menu only if **AssetView** is installed and the controller has already been commissioned.
- The SQL Server must have been started and should be running.
- The controller must have been registered in the **AssetView** database, using the **AssetServer**.

Refer to the **AssetView User's Manual** for details on registering controllers.

Searching Controllers

To search the controller:

1. Select one of the filter options: **Device Tag**, **Device ID**, **IP**, **Status**, **Commissioned**, **Model Name**, or **Area**.
2. Type the word related to the controller to be searched.
3. Click the button **Search**.

HINT
The wild char '*' (asterisk) can be used to replace one or several characters. The asterisk may be placed anywhere in a search string, and the string may include several asterisks. The "?" (Question mark) can be also used as a wild char.

Advanced Search

Click **Advanced Search** at the bottom of the **Controllers** dialog box. Use the **Advanced Search** dialog box to find the items that match two or more criteria simultaneously.

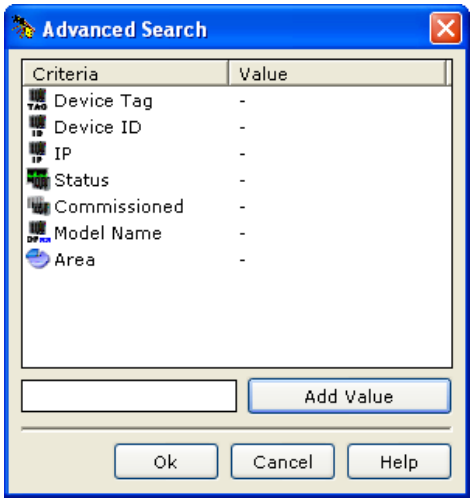


Figure 4.23. Advanced Search

Type the word to be searched on the text box, click the criteria icon to select it and click the button **Add <Value>**. See the example below:

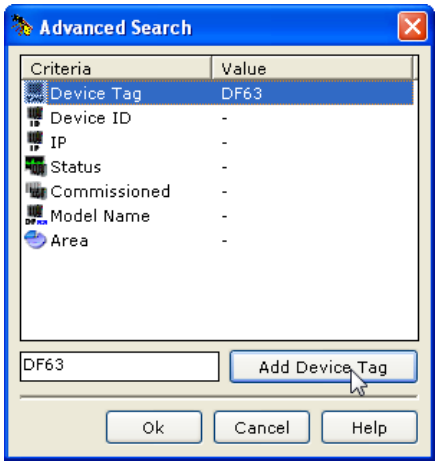


Figure 4.24. Defining Search Criteria

Repeat the steps above to add other criteria.

To delete the value from one criterion, right-click the value and click the option **Delete**. To delete all values from the **Advanced Search** dialog box, right-click the dialog box area and click the option **Delete All**.

I/O Points

List of I/O Points

To open the list of all devices in the Database and the configured I/O points, expand the icon **Network Devices > I/O Points** and click **Net I/O** in the topology tree. The **Studio302 I/O** window will open.

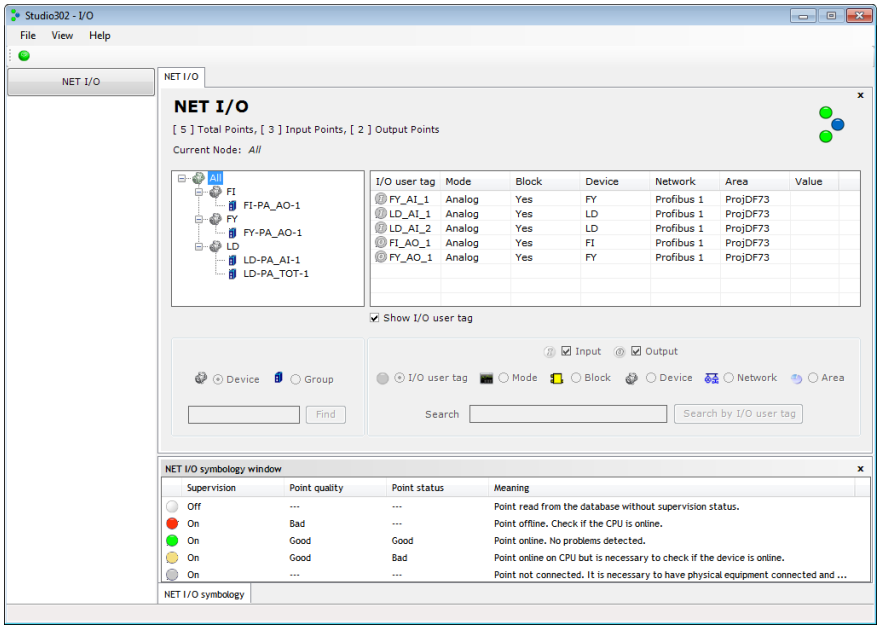

Studio302 - I/O
File View Help
NET I/O
NET I/O
[5] Total Points, [3] Input Points, [2] Output Points
Current Node: All
All
FI
FI-PA_AO-1
FY
FY-PA_AO-1
LD
LD-PA_AI-1
LD-PA_TOT-1
I/O user tag Mode Block Device Network Area Value
FY_AI_1 Analog Yes FY Profibus 1 ProjDF73
LD_AI_1 Analog Yes LD Profibus 1 ProjDF73
LD_AI_2 Analog Yes LD Profibus 1 ProjDF73
FI_AO_1 Analog Yes FI Profibus 1 ProjDF73
FY_AO_1 Analog Yes FY Profibus 1 ProjDF73
Show I/O user tag
Device Group
Find
Input Output
I/O user tag Mode Block Device Network Area
Search
Search by I/O user tag
NET I/O symbology window
Supervision Point quality Point status Meaning
Off --- --- Point read from the database without supervision status.
On Bad --- Point offline. Check if the CPU is online.
On Good Good Point online. No problems detected.
On Good Bad Point online on CPU but is necessary to check if the device is online.
On --- --- Point not connected. It is necessary to have physical equipment connected and ...
NET I/O symbology

Figure 4.25. Net I/O Window

On the **Studio302 I/O** window, mark the option **Show I/O user tag** to list the points according to the tag defined by the user in **Syscon**.

Besides displaying details about I/O Points, such as their mode, device tag and network channel, you can also view their mapping offset. Right-click the I/O Point icon at the **I/O Tag** column and click **Details**.

I/O Points Details

On the **Studio302 I/O** window, right-click the I/O Point icon on the **I/O Tag** column and click **Details**. The **I/O points details** dialog box opens.

For analog I/O points, this dialog box indicates the memory offset and the scale defined for the selected I/O Point, using the **Mapping Tool** application.

For discrete I/O points, this dialog box indicates the memory offset and the data bit offset for the selected I/O Point.

It is not possible to edit I/O point information in the **I/O points details** dialog box. To edit the I/O point, open the Area that contains the corresponding device in **Syscon**. Refer to **Syscon Help** for details.

I/O Points Supervision Mode

On the **Studio302 I/O** window, mark the option **Supervision** to launch **ServerManager** and start monitoring the values of the I/O points, which are indicated in the **Value** column.

The **I/O User Tag** column indicates the quality and the status of the point during supervision.

To open the **Symbology** window that details the point supervision indication, go to the **View** menu and click the option **NET I/O symbology window**. References for the point quality and status are indicated at the bottom of the **Studio302 - I/O** window.

Points signalized in red may indicate there is a problem in the OPC communication. Points signalized in green indicate the communication is good and the point value is being read from the device.

It is necessary to export tags using **Syscon** to guarantee the OPC communication.

Searching I/O Points

To search the I/O point, first select one of the filter options: **I/O Tag**, **Mode**, **Block**, **Device** or **Network**.

Type the word related to the I/O Point to be searched and click **Search**. Points related to your search will be displayed at the I/O points table.

HINT
The wild char '*' (asterisk) can be used to replace one or several characters. The asterisk may be placed anywhere in a search string, and the string may include several asterisks. The "?" (Question mark) can be also used as a wild char.

Customizing the Studio302 I/O Window

You can customize the **Studio302 I/O** window and select the columns that will be displayed. Right-click the window area and click the option **Customize View**.

The dialog box will open. Select the desired columns and click **Apply**.

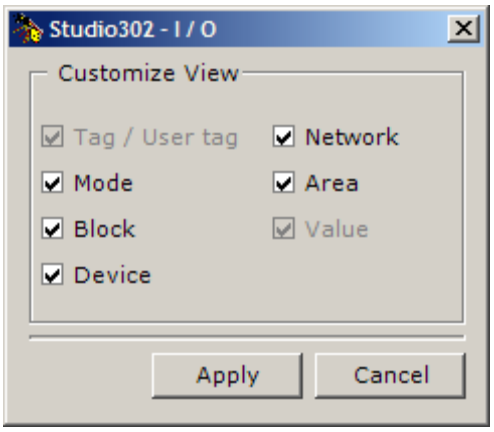


Figure 4.26. Customizing the Studio302 I/O Window

Saving the Log File

To save the information related to the I/O Points supervision, right-click the **Studio302 I/O** window area and click the option **Save Log File**.

Field Devices

Detecting New Devices

The *Device Detection Service* alerts you about new devices being added to the plant, when the plant is already operating.

You can initialize this service manually, in **Settings > Communication,** clicking the **Start** button on the **Services** tab in the **Communication Settings** dialog box or by clicking the **Online/Offline Communication** button on the main toolbar.

When a new device is detected, the **Studio302** icon in the taskbar blinks and a dialog box opens informing the user about the new device detected. See the example in the figure below:

Figure 4.27. Detecting Devices

IMPORTANT
If a device is replaced in the plant in the maintenance procedure, this device will be detected by this service and can only be commissioned if its logical representation exists in a configuration included in the current Database of the **Studio302**. That is, a device – virtual or not commissioned – should exist in the **Syscon** configuration that represents the plant process control, to be associated to the new physical instrument detected.

To commission the new device, click **Yes** and **Syscon** will be executed, automatically opening the project that contains the bridge where the device was detected.

If the user clicks **No**, the device will appear in the list of new devices detected in ***Studio302***, waiting for the commissioning. To open the **New Device** window, click the button on the toolbar.

To commission the device from the **New Device Detect** window, right-click its icon and click **Commission**. **Syscon** will be executed. Refer to the **Syscon User's Manual** for details on commissioning a device.

Field Device List

To open the list of all devices in the Database, expand the icon **Network Devices** and click **Field Devices** in the topology tree.

The **Field Devices List** dialog box will open. You can execute several procedures, such as opening the device's pages with **AssetView**, commissioning and decommissioning a device, or downloading the configuration using **Syscon**.

The **Field Devices List** dialog box displays the information related to the devices in the current Database, such as the device ID, the tag of the fieldbus channel connected to the device, the number of the port that connects the bridge to the fieldbus and the device status in the plant configuration.

Click **Refresh** at the bottom of the **Field Devices List** dialog box to read the information of all devices from every configured OPC Server.

	The file containing the device is located in the local machine.
	The file containing the device is located in the local machine and it is being edited.

	The file containing the device is located in the server machine.
	The file containing the device is located in the server machine and it is being edited.
	The file containing the device is located in the server machine and it is being edited by another user.

Managing Devices

Using the **AssetView** pages, you can manage the device's maintenances and diagnostics. Right-click the device icon and click the corresponding device page.

Note that:

- The *Configuration*, *Calibration*, *Diagnostic*, *Identification*, *Maintenance*, *Monitoring*, *Display* or *DeviceView* pages will be available in the device's menu only if **AssetView** is installed and the device has already been commissioned.
- The SQL Server must have been started and should be running.
- The device must have been registered in the **AssetView** database, using the **AssetServer**.

Refer to the **AssetView User's Manual** for details on registering devices.

Searching Devices

To search the device, first select one of the filter options: *Device Tag*, *Device ID*, *Protocol*, *Bridge*, *Port*, *Status*, *Commissioned*, *Network*, *Address*, or *Area*.

Type the word related to the device to be searched and click **Search**.

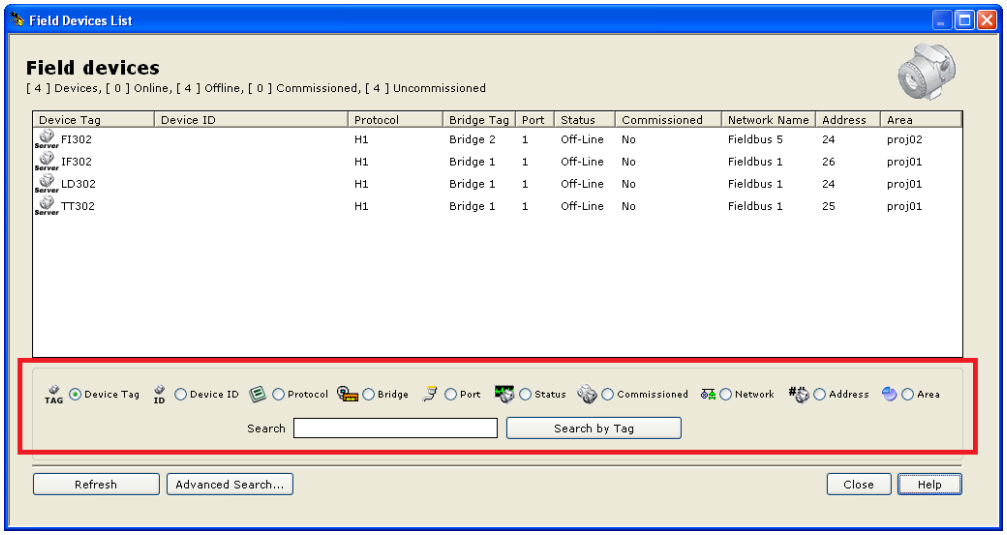


Figure 4.28. Searching Devices

HINT
The wild char '*' (asterisk) can be used to replace one or several characters. The asterisk may be placed anywhere in a search string, and the string may include several asterisks. The "?" (Question mark) can be also used as a wild char.

Advanced Search

Click **Advanced Search** at the bottom of the **Field Devices List** dialog box. Use the **Advanced Search** dialog box to find the items that match two or more criteria simultaneously.

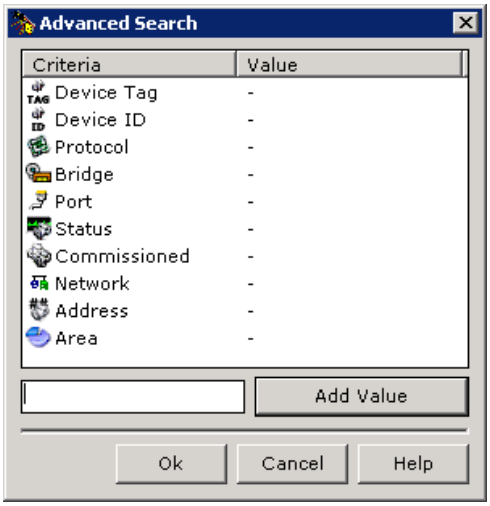


Figure 4.29. Advanced Search

Type the word to be searched on the text box, click the criteria icon to select it and click the button **Add <Value>**. See the example below:

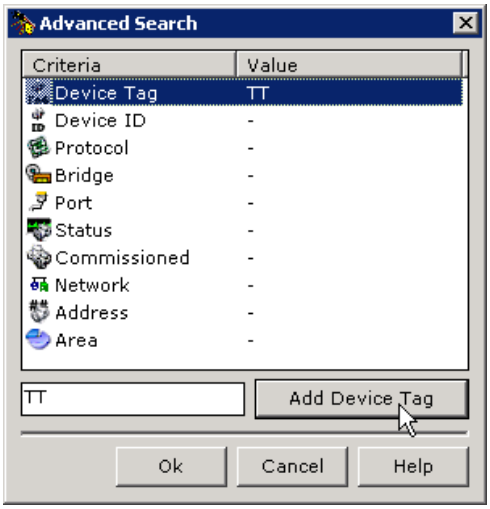


Figure 4.30. Defining Search Criteria

Repeat the steps above to add other criteria.

To delete the value from one criterion, right-click the value and click the option **Delete**. To delete all values from the **Advanced Search** dialog box, right-click the dialog box area and click the option **Delete All**.

Fieldbus Devices

Configuring a Fieldbus Device

Right-click the device icon and click **Configuration** to access the information on the device configuration.

Syscon will open the configuration that contains the selected device. Refer to the **Syscon User's Manual** for details on configuring a device.

Commissioning a Device

Right-click the device icon and click **Commission** to commission a device. **Syscon** will open the configuration that contains the selected device.

In the **Commission** dialog box, click the button to select the device ID. The **Device Selection** dialog box will open. Select the icon of the device ID and click **Ok** to conclude.

Refer to the **Syscon User's Manual** for details on commissioning a device.

Decommissioning a Device

You can remove a device from the process control after the device has been commissioned. Right-click the icon of the device to be decommissioned and click **Decommission**.

Syscon will be executed, and the device will be removed from the process control. Refer to the **Syscon User's Manual** for details on decommissioning a device.

Device Download

You can download the device configuration right-clicking the device icon and clicking **Download**.

The download is executed using **Syscon**. Refer to the **Syscon Online Help** or the **Syscon User's Manual** for details on downloading the configuration to the device.

HART Devices

Configuring a HART Device

Right-click the HART device icon and click the option **Open DTM** to open the area that contains the selected device on the **FDT HART Configurator** tool.

Refer to the **FDT HART Configurator Help** for details on configuring the HART device.

Profibus Devices

Configuring a Profibus Device

Open the **Field Devices List** dialog box, right-click the Profibus device icon and click the option **Cyclic Configuration** to open **Syscon** and edit the configuration file that contains the selected device. Refer to the **Syscon User's Manual** for details on configuring a Profibus device.

Right-click the Profibus device icon and click the option **Acyclic Configuration** to access the information on the device configuration. The **ProfibusView** application will open the device dialog box. Refer to the **ProfibusView User's Manual** for details on configuring the Profibus device.

Right-click the Profibus device icon and click **Open DTM** to open the **AssetView FDT** application. This application allows you to parameterize blocks from the device, in *online* or *offline* mode. Refer to the **AssetView FDT User's Manual** for details.

Detecting a Profibus Device

When a new Profibus device is connected to the plant, it is necessary to configure the address.

Click the button on the **Applications** toolbar to open the **ProfibusView** dialog box:

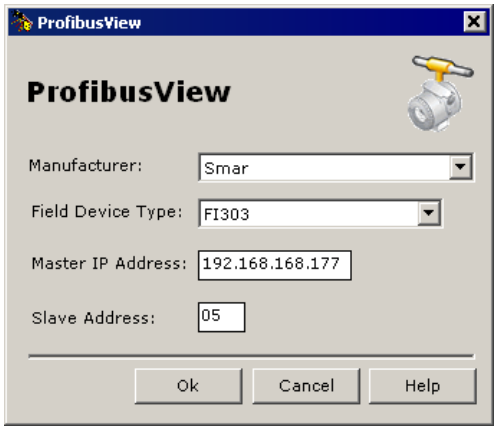


Figure 4.31. Detecting Profibus Devices

Select the device manufacturer and the type of the device. Type the master IP address and the slave address. Click **Ok** to conclude.

It will be necessary to open the configuration file and add the device to the plant strategy.

DeviceNet, AS-i and Modbus Devices

Configuring a DeviceNet, AS-i or Modbus Device

Open the **Field Devices List** dialog box, right-click the device icon and click the option **Configuration** to open **Syscon** and edit the configuration file that contains the selected device.

Refer to the **Syscon User's Manual** for details on configuring a DeviceNet, AS-i or Modbus device.

Configuration Samples

When you run **Studio302** for the first time, the **Samples Screen** opens and you can select a configuration file sample to be opened.

The **Studio302 Samples** are created by Smar engineers to provide standard examples of plant control applications.

Figure 4.32. Studio302 Samples Screen

Click the link **Configuration Files** to select a configuration sample. The **Unpack Files** dialog box will open.

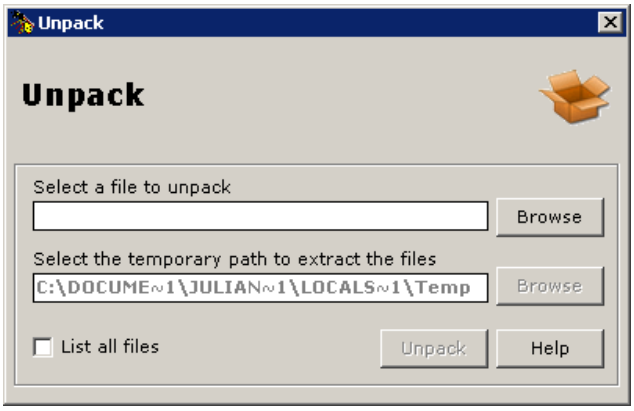


Figure 4.33. Selecting a Sample File

In the area **Select a file to unpack**, click **Browse** to locate the sample file. During the **SYSTEM302** installation, the samples files created by Smar are copied to the default installation folder: *C:\Program Files\Smar\Studio302\Samples\Configurations*\.

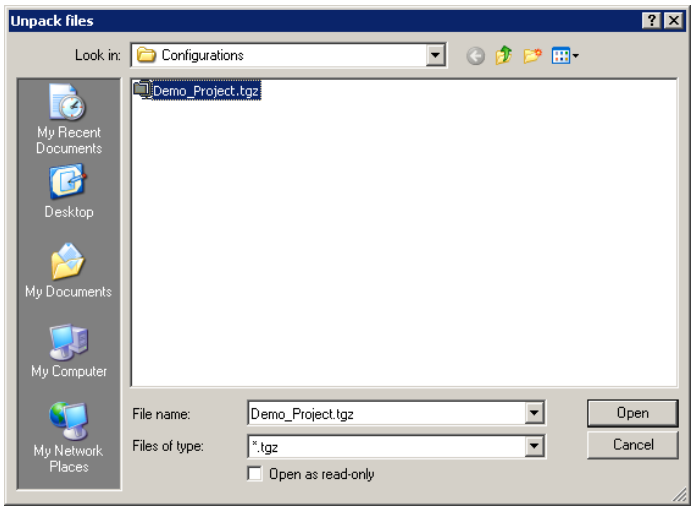


Figure 4.34. Unpacking a Sample File

Select the file icon and click **Open** to return to the **Unpack** dialog box.

In the area **Select the temporary path to extract the files**, click **Browse** to select a temporary folder that will be used during the unpack process.

Click **Unpack** to execute the procedure and unpack the sample file to the current **Studio302** database. The configuration and support files will be extracted to the current database.

PROCESS EQUIPMENT DATABASE

Click the **Process Equipment Database** icon on the topology tree to open the **Process Equipment Database** window.

All information about the instruments in the plant will be stored in a Database. A node in the database will represent an instrument. This node gathers specific attributes of the instrument, and common links and attributes inherit from the category.

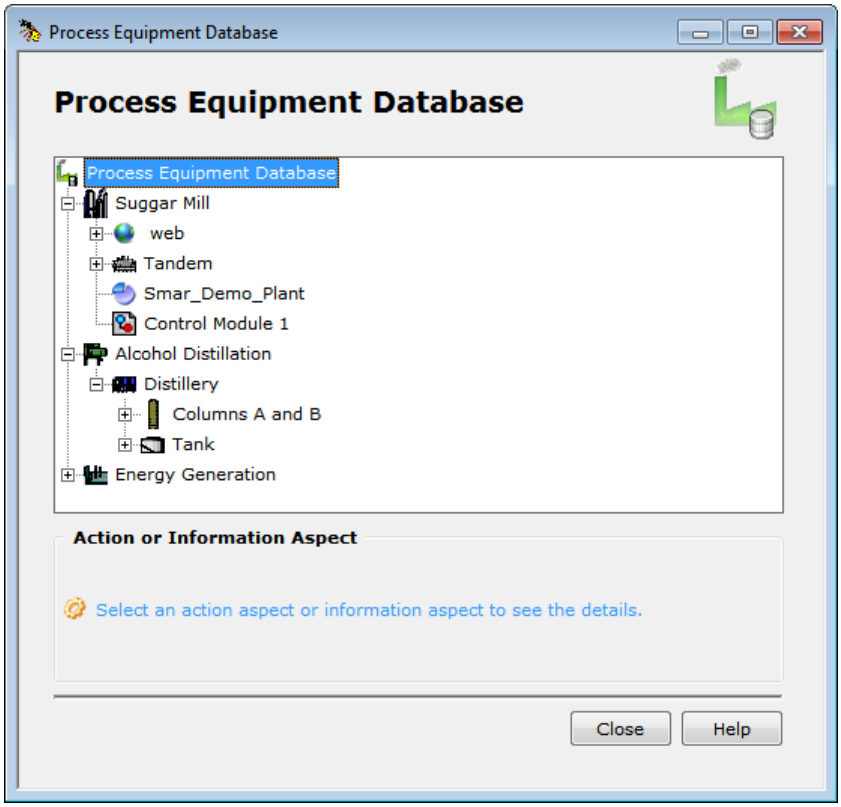


Figure 5.1. Process Equipment Database

Specific instrument attributes includes links to documentation files, instrument images, Web pages, process visualization and supervision screens, and executable files.

Importing the Process Equipment Database

To import the information from the **Process Equipment Database** of another machine:

1. Go to the **File** menu, select the option **Import** and then click **Process Equipment Database**.
2. The **Import Process Equipment Database** dialog box will open.
3. Click **Browse** to select the folder where the compacted file is located.
4. Select the file icon and click **Open**.
5. **Studio302** will verify the information in the compacted file, comparing it to the information in the current **Process Equipment Database**. The **Import Process Equipment Database** dialog box will indicate if there are any conflicts with the parameters.

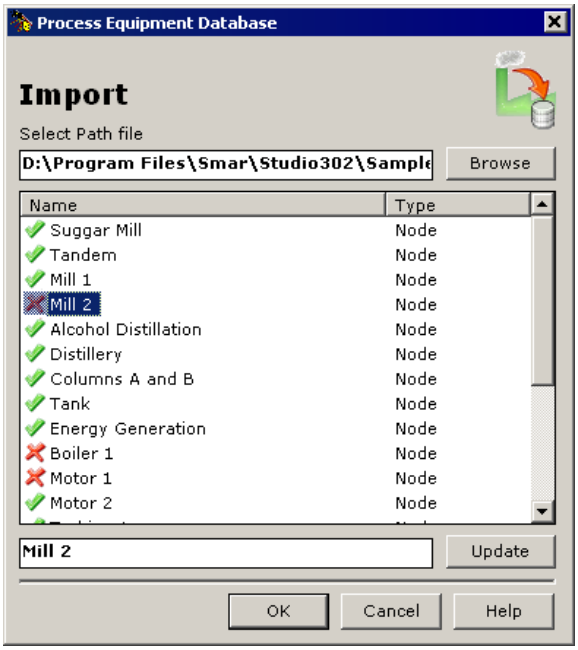


Figure 5.2. Importing the Process Equipment Database

6. If there is a conflict with the tags of the nodes and types, you will have to edit the tags:
   i. Select the icon of the tag;
   ii. Type the new tag on the text box at the bottom of the dialog box;
   iii. Click **Update**.
7. Click **Ok** to conclude and import the new nodes to the **Process Equipment Database**.

Exporting the Process Equipment Database

You can compact the information from the **Process Equipment Database** in one single file and send this file to another machine.

On the **File** menu, click **Export** and then click **Process Equipment Database**. The **Export Process Equipment Database** dialog box will open.

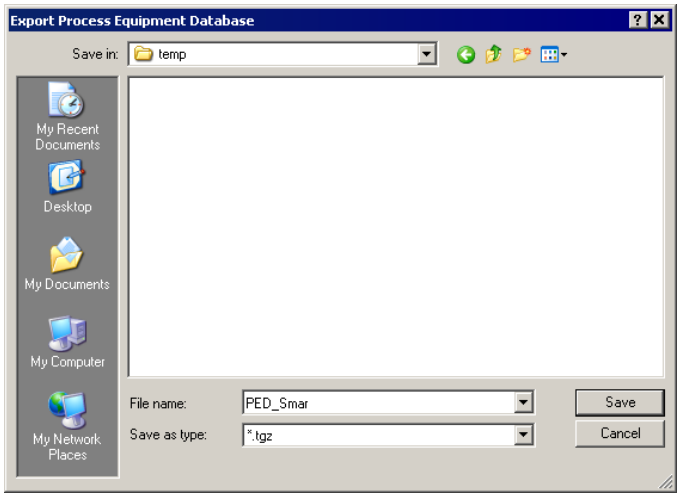


Figure 5.3. Exporting the Process Equipment Database

Browse the directories to select the folder to save the file, and type the name for the compacted file. The file extension will be "**.tgz*". Click **Save** to compact the information and save the file.

Saving an equipment template

On the **Process Equipment Database** window, right-click the icon of the equipment and select the option **Save as Template**. The dialog box will open.

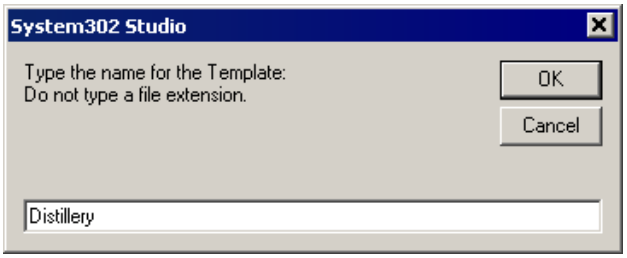


Figure 5.4. Saving an equipment template

Type the name for the template file but **do not** type a file extension. Click **Ok** and a message box will open indicating the location to the template file. The default path for equipment template files is *C:\Program Files\Smar\Studio302\Bin\Templates*.

Click **Ok** to conclude.

Importing an equipment template

On the **Process Equipment Database** window, right-click the **Process Equipment Database** icon, or the icon of the parent equipment where the new equipment will be created, and select the option **Import Template**.

The **Import Template File** dialog box will open. Select the icon of the desired template file and click **Open**. Remember that the default path for equipment template files is *C:\Program Files\Smar\Studio302\Bin\Templates*.

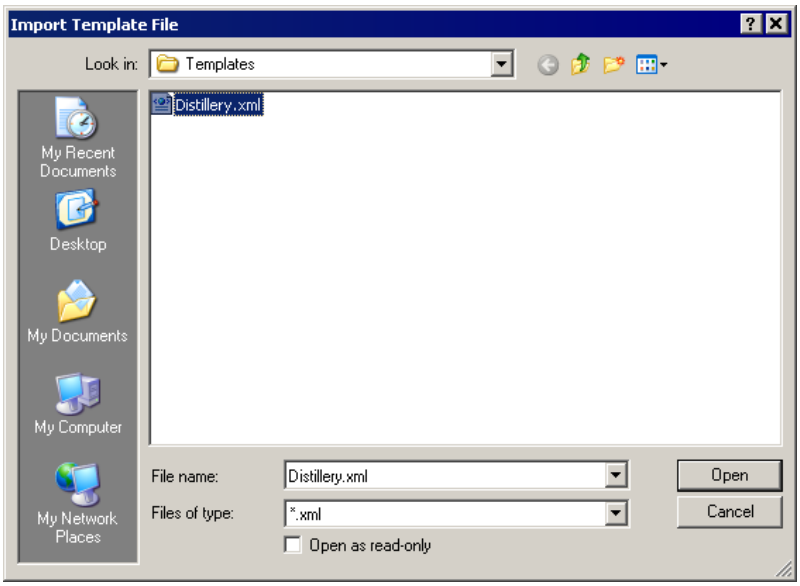


Figure 5.5. Importing an equipment template

A message box will open informing that the procedure was successful. Click **Ok** to conclude.

IMPORTANT
It is **not** possible to import the same template file again, in the **Process Equipment Database**.

Searching similar equipments

Similar equipments are instances of an equipment or special item created as a copy from another equipment in the **Process Equipment Database**. Similar equipments are displayed in green in the **Process Equipment Database**. See the example below:

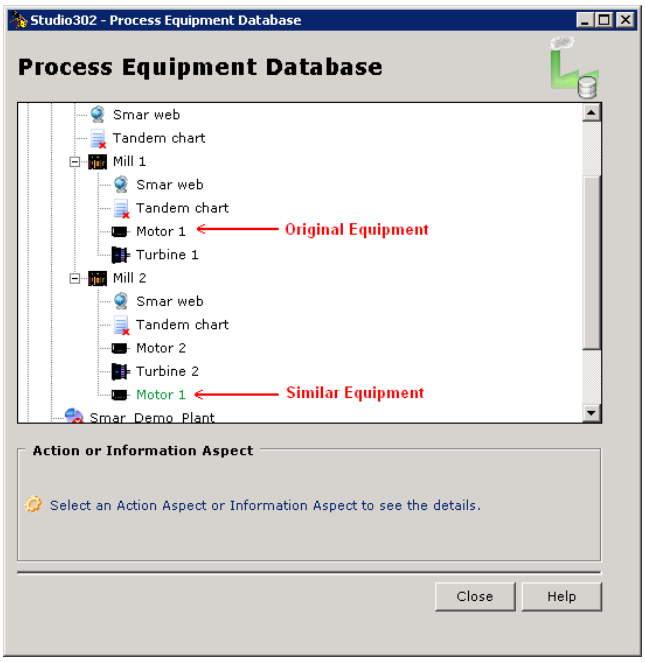


Figure 5.6. Similar Equipments

To locate all equipments similar to a specific equipment or special item, right-click the icon of the instance of an equipment or special item and select **Find Similar Equipments**.

The **Similar Equipments** dialog box will list the parent equipments that contain instances similar to the selected equipment.

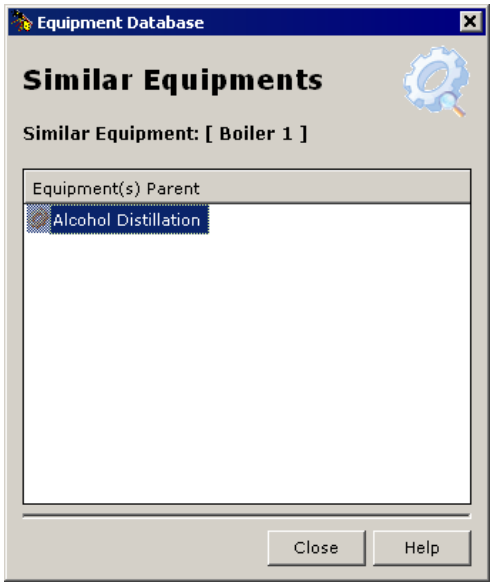


Figure 5.7. Locating Similar Equipments

From the **Similar Equipments** dialog box, right-click an item and click **Delete the Similar Equipment** to remove the occurrences of similar equipments. See the following section **Removing an Equipment**.

Right-click the icon of the equipment and click **Save as Template** to create the xml template file based on the selected similar equipment.

Equipments

Creating an Equipment

On the **Process Equipment Database** window, right-click the **Process Equipment Database** icon and select the option **New Equipment**. The **New Equipment** dialog box will open.

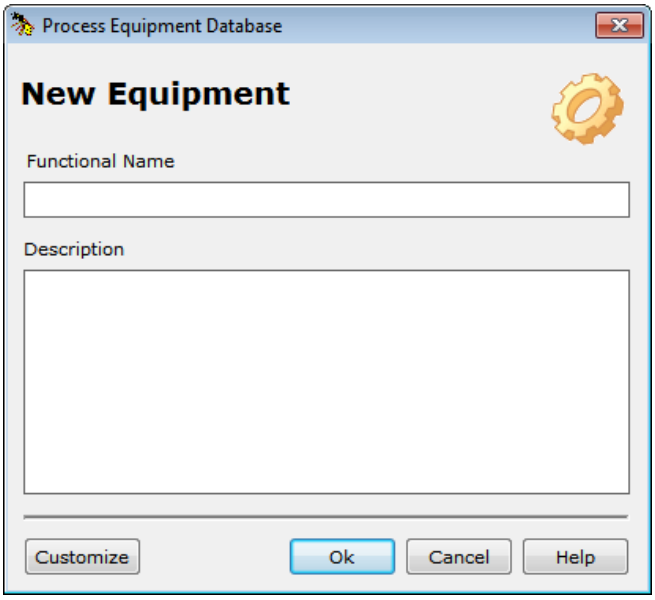


Figure 5.8. Creating Equipments

Type the name in **Functional Name** and a brief description for the equipment. Click the button **Customize** to open the **Customize Aspects** dialog box and edit the aspects for the new equipment. See section **Customizing Aspects** for details.

Click **Ok** to conclude.

Creating Aspects for the Equipment

On the **Process Equipment Database** window, right-click the equipment icon and click **New Equipment**. The **New Equipment** dialog box will open.

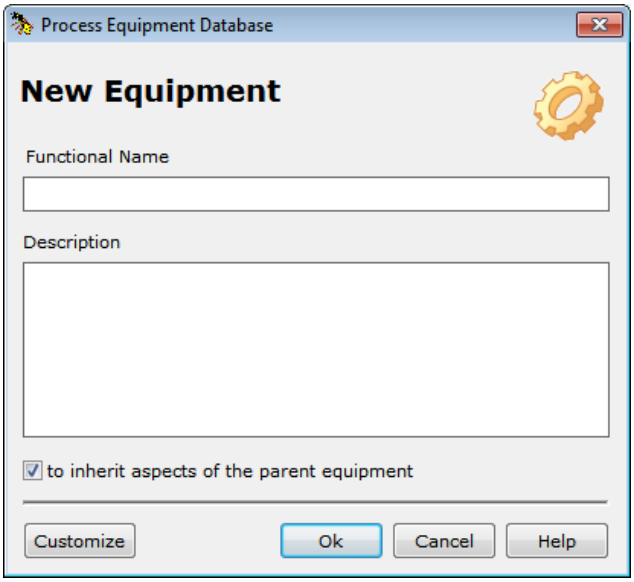


Figure 5.9. Creating Types

Type the name in **Functional Name** and a brief description for the equipment type.

Mark the option **Inherit the aspects of the parent equipment** to apply the aspects defined for the Parent node to the equipment being created. If this option is not marked, the aspects will not be applied to the new equipment.

Click the button **Customize** to edit the aspects for the new equipment. See section **Customizing Aspects** for details.

Click **Ok** to conclude.

Replicating Equipments

To create a new instance of an equipment or special item, right-click the icon and click **Copy** from the popup menu.

Then, right-click the other equipment or special item where the new instance will be created and select the option:

- **Paste as reference:** all information and aspects will be copied to the new instance of the equipment or special item, and any changes made to the new instance will be applied to the original equipment, and vice-versa.
- **Create new equipment from:** all information and aspects will be copied to the new instance of the equipment or special item, but changes made to the new instance will not affect the original equipment, and the changes made to the original equipment will not be applied to the new instance created.

Searching Equipments

Right-click an **Equipment** icon and click **Search Equipment**. The **Search Equipment** dialog box will open.

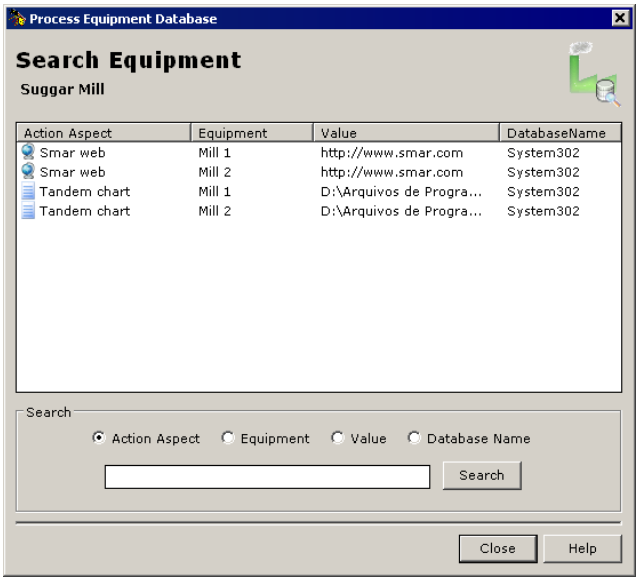


Figure 5.10. Searching Nodes

Select one of the filter options: *Action Aspect*, *Equipment*, *Value*, or *Database Name*. Type the word related to the node to be searched and click **Search**.

HINT
The wild char '*' (asterisk) can be used to replace one or several characters. The asterisk may be placed anywhere in a search string, and the string may include several asterisks. The "?" (Question mark) can be also used as a wild char.

Removing an Equipment

To remove equipments from the **Process Equipment Database**, right-click the equipment icon, in the **Process Equipment Database** dialog box, and click **Delete Equipment**.

A message box will open to confirm the operation. Click **Yes** to delete the equipment and the aspects related to the equipment will be removed from the **Process Equipment Database**. Or click **No** and the equipment will not be deleted.

If there is one "similar equipment", that is, an instance of an equipment or special item created as a copy from another equipment, in the **Process Equipment Database**, a dialog box will open to confirm the operation:

- Select **Delete this Similar Equipment only from this Equipment Parent** to remove only the selected item from the **Process Equipment Database**.
- Select **Delete this Similar Equipment from all Equipments** to remove all references to the selected item from the **Process Equipment Database**.

Removing Inherited Aspects

To remove inherited aspects from the equipment, right-click the equipment icon and click **Remove Inherit**. The aspects inhered from the Parent node will be deleted and new aspects created for the Parent node will no longer be inhered by the sub-node.

Only the aspects from the sub-nodes will be deleted. The aspects from the Parent node will not be affected.

Special Items

A special item can be an instrument, a control module or an area, that is part of the configuration file managed by **Studio302**.

Creating Special Items

On the **Process Equipment Database** window, right-click the **Process Equipment Database** icon and click **New Special Item**. The **New Special Item** dialog box will open.

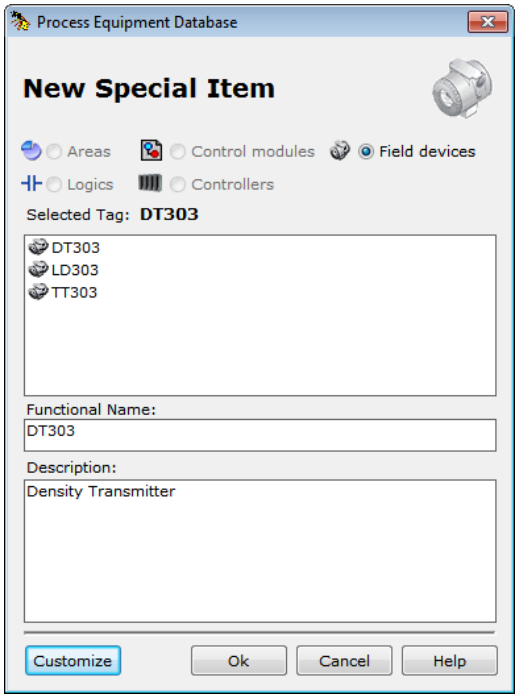


Figure 5.11. Creating Special Items

Select the category of the special item: **Areas**, **Control Module, Field Devices, Logics** or **Controllers**. Then, select the icon of the tag related to the special item being created.

Type a brief description for the special item. Click the button **Customize** to edit the aspects for the new special item. See section **Customizing Aspects** for details.

Click **Ok** to conclude.

Aspects

The **Aspects** window shows details about customized aspects for the selected equipment, such as the description, charts, web links, executable files, etc. Right-click the icon of the equipment and click **View Aspects Window**.

Creating Aspects

On the **Process Equipment Database** window, right-click the icon of the equipment and click **Customize Aspects**. The **Customize Aspects** dialog box will open. Click **New**.

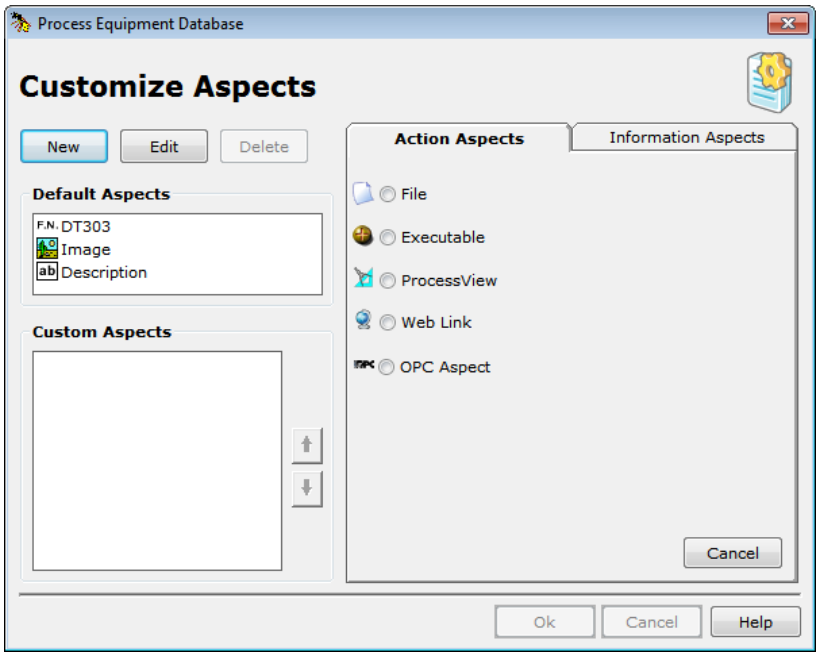


Figure 5.12. Creating Aspects

Select the type of the new **Action** or **Information Aspects**. Configure the information related to the new aspect. Click **Ok** to conclude. This process can be repeated as many times as necessary without having to close the window. See section **Customizing Aspects** for details.

Editing an Aspect

Click the aspect icon and then **Edit**. The **Customize Aspects** dialog box will expand and the **Update** tab will appear. Configure the information related to the aspect. See section **Customizing Aspects** for details.

Click **Ok** to conclude.

Copy and Paste an Aspect

Right-click the aspect you want to copy in the main **Process Equipment Database** window and select **Copy Aspect**.

Select the equipment icon where the copy of the aspect will be created. Right-click the equipment and select **Paste Aspect**.

ATTENTION
If you want to move an aspect from one equipment to another, right-click the aspect icon and select **Cut Aspect** instead of the option **Copy Aspect**. Then, right-click the target equipment icon and select **Paste Aspect**. The aspect will be deleted from the original equipment and added to the target equipment.

Customizing Aspects

Click the button **Customize** when creating an aspect or in the **Aspects** window to open the **Customize Aspects** dialog box.

Default Aspects

In the **Default Aspects** box, double-click the default aspect to edit the information.

- **F.N.:** type the tag for the equipment or special item.
- **Image:** click **Browse** to select an image to represent the equipment or special item.
- **Description:** type a brief description for the equipment or special item.

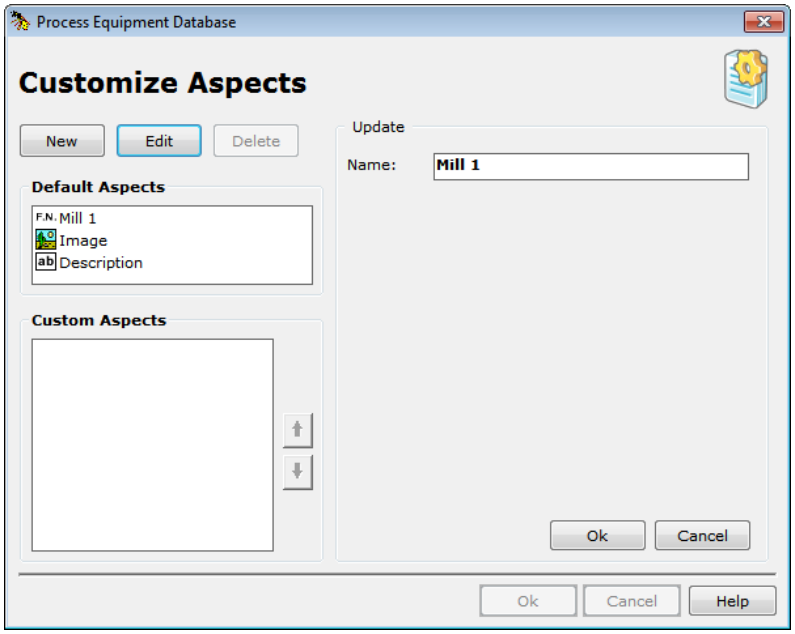


Figure 5.13. Default Aspect

Action Aspects

At the **Customize Aspects** dialog box, select the **Action Aspects** tab.

- **File:** Include a link to any type of files related to the aspect, such as user's manuals, technical documentation and pictures. Click the **Browse** button to locate the file and type the name for the new aspect.

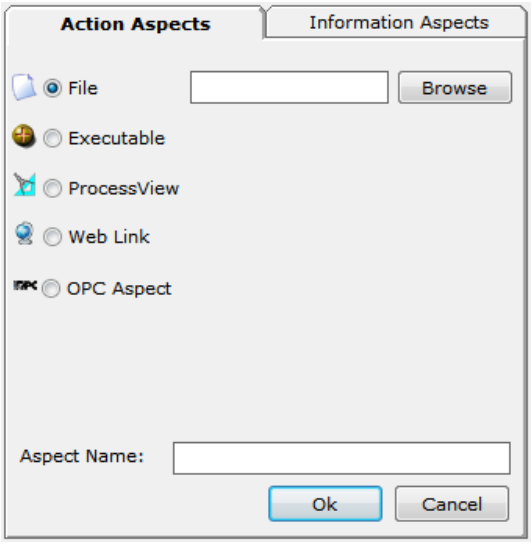


Figure 5.14. Attaching Files

- **Executable:** Include a link to an executable file related to the aspect. Click the **Browse** button to locate the file and type the name for the new aspect.

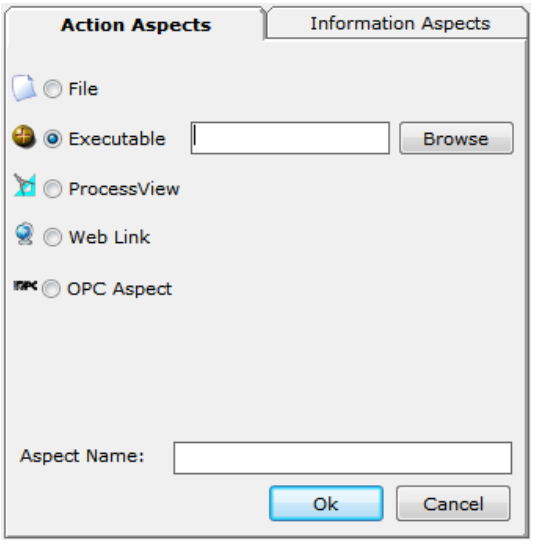


Figure 5.15. Attaching Executable Files

- **ProcessView:** Include a link to **ProcessView** files related to the aspect, such as process mimic screen, alarm screens and trend view screens. Click the **Browse** button to locate the file and type the name for the new aspect.

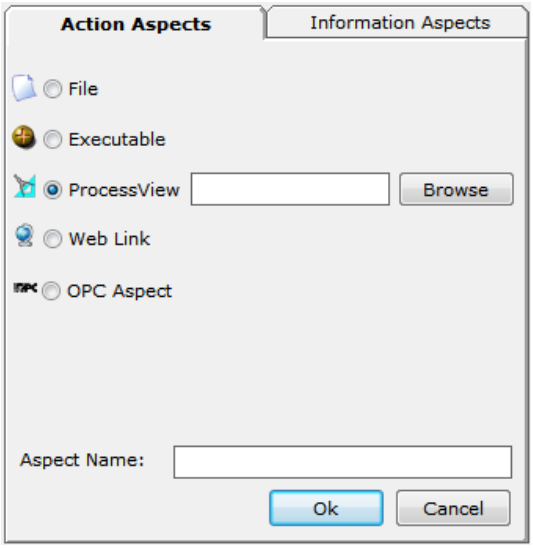


Figure 5.16. Attaching ProcessView Files

- **Web Link:** Include a link to a Web page related to the aspect, such as the device manufacturer's pages. Type the URL address and type the name for the new aspect.

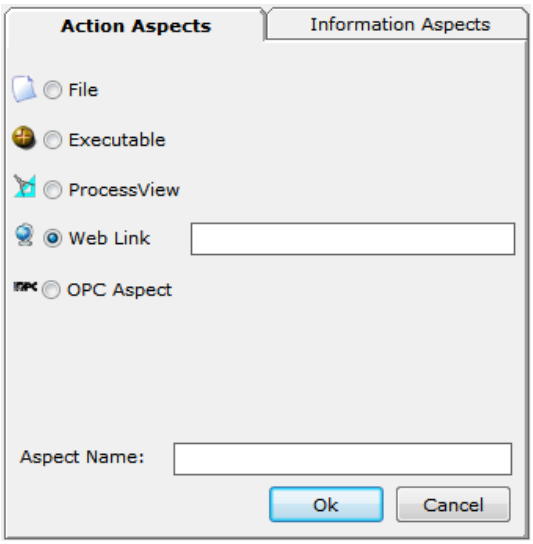


Figure 5.17. Linking to a Web Page

- **OPC Aspect:** Include a representation for an OPC tag. The value will be monitored in the **Process Equipment Database** window. This aspect is only available for the *Device* special item. See section **Configuring OPC Aspects**.

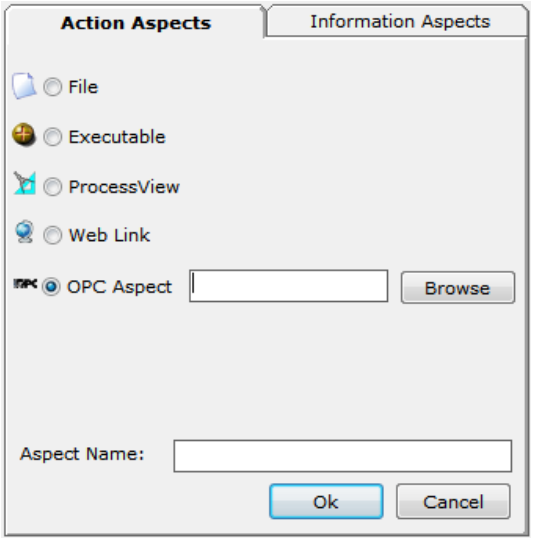


Figure 5.18. OPC Aspects

Information Aspects

At the **Customize Aspects** dialog box, click **New** and select the **Information Aspects** tab.

- **Input Text:** Include a text field for the equipment. Type the name for the new aspect and add the information text.

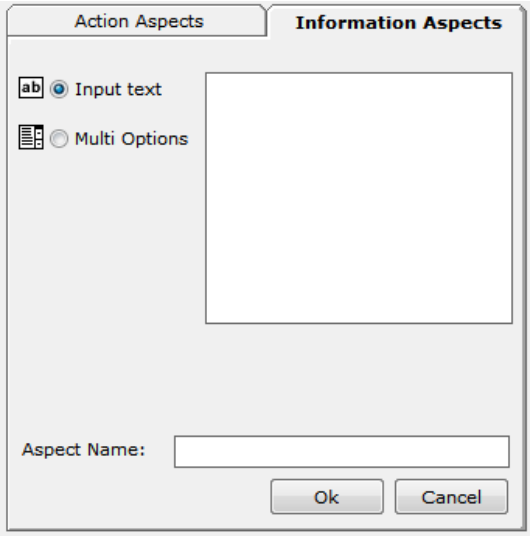


Figure 5.19. Input Text

- **Multi Options:** Include a multiple options text field to list the information related to the aspect. Type the name for the new aspect; add each option by typing the option text and clicking the **Add** button.

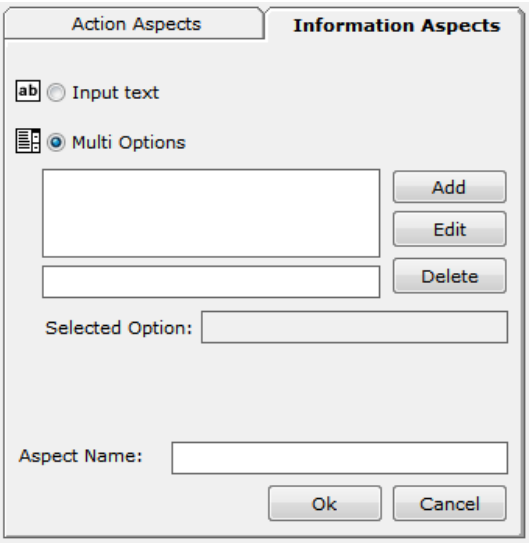


Figure 5.20. Multi Options

To edit an option, select this option and click **Edit**. Type the new information and press **Enter** on your keyboard. The **Selected Option** field indicates which is the default option that appears selected when the user clicks on this aspect.

OPC Aspects

Configuring OPC Aspects

When creating an **OPC Aspect** on the **Customize Aspects** dialog box, click **New,** and then select **Action Aspects** tab. Click **OPC Aspect** option and then click the **Browse** button to open the **OPC Browser** dialog box.

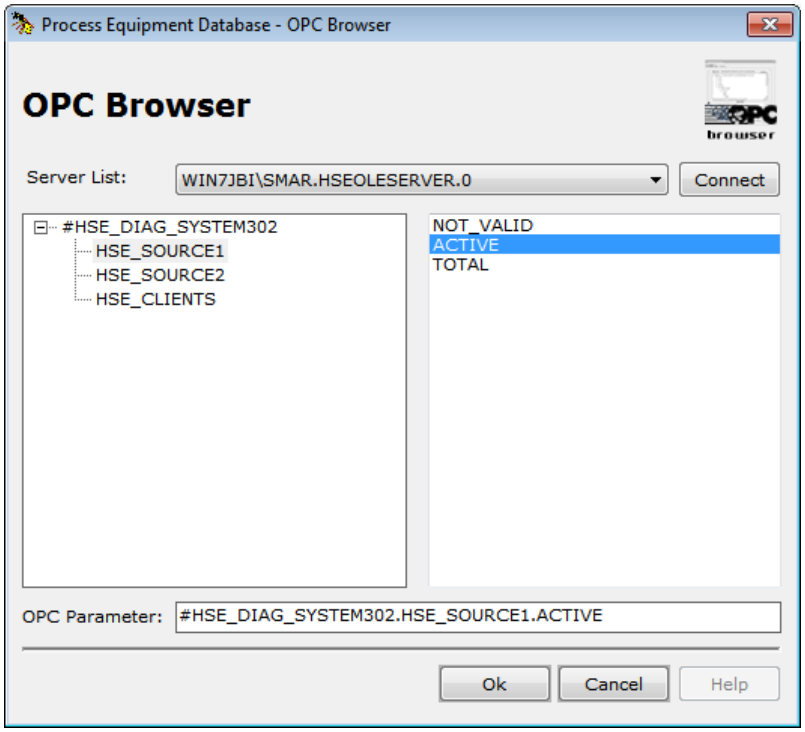


Figure 5.21. OPC Browser dialog box

Select the OPC server from the list and click **Connect** to read the list of available parameters from the selected server.

Click the block icon on the box on the left side of the dialog box and the list of parameters related to this block will be displayed on the box at the right side of the dialog box.

Select the OPC parameter icon and click **Ok** to return to the **Customize Aspects** dialog box.

When you click **Ok** at the **Customize Aspects** dialog box, the value of the OPC parameter will be read from the server and indicated on the **Process Equipment Database** window.

Connecting and disconnecting OPC Aspects

On the **Process Equipment Database** window, right-click the **Process Equipment Database** icon and select **Connect all OPC Aspects**. The values of all OPC parameters will be read from the server and indicated on the **Process Equipment Database** window.

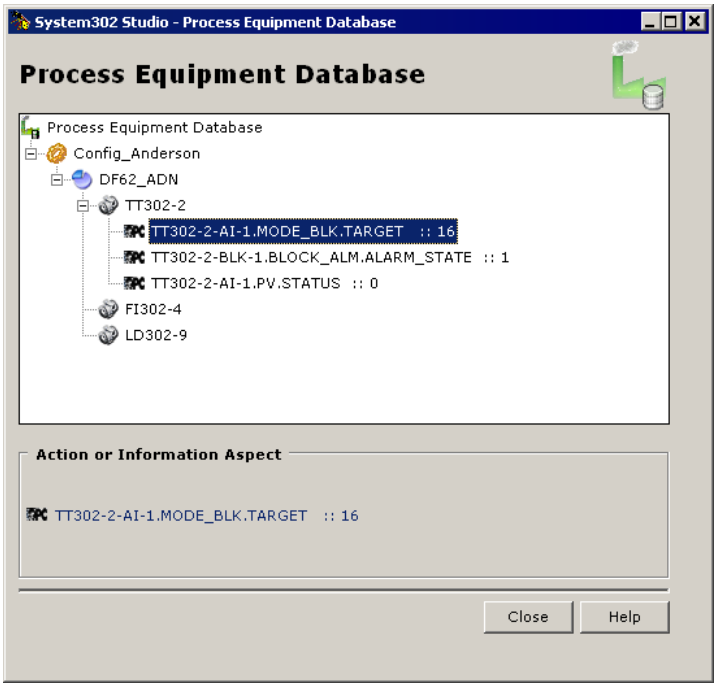


Figure 5.22. Monitoring OPC Aspects

To monitor only a specific OPC parameter, right-click the corresponding OPC Aspect icon and click **Connect OPC Aspect**.

To stop monitoring the OPC parameters, right-click the **Process Equipment Database** icon and click **Disconnect all OPC Aspects**. To stop monitoring only a specific OPC parameter, right-click its icon and click **Disconnect OPC Aspect**.

OPC Aspects details

Right-click an OPC Aspect icon and click **Details**. The **OPC Aspect Details** dialog box will open.

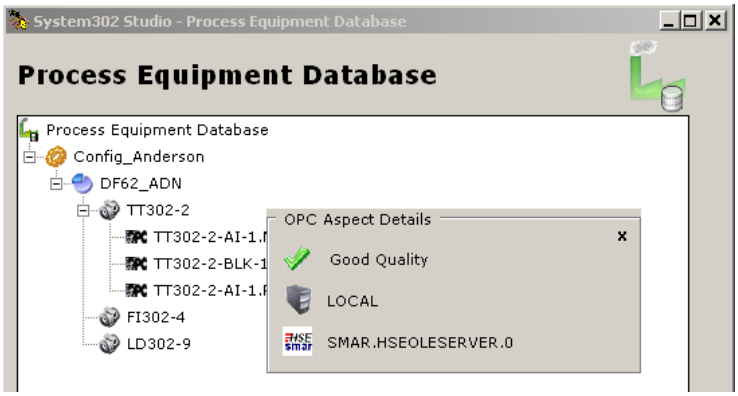


Figure 5.23. OPC Aspect Details dialog box

The **OPC Aspect Details** dialog box indicates the quality of the communication, the location (remote or local) of the project configuration file where the block parameter was created and the OLE server selected for the communication.

Process Equipment Database Samples

When you run **Studio302** for the first time, the **Samples Screen** opens and you can select a **Process Equipment Database** sample to be opened.

The **Studio302 Samples** are created by Smar Engineers.

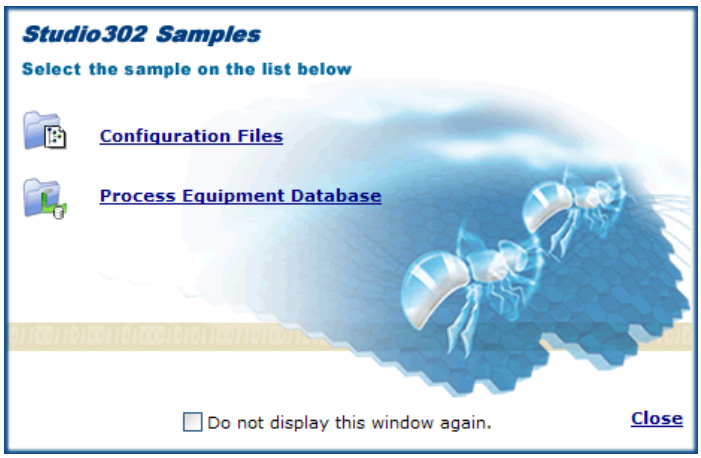


Figure 5.24. Studio302 Samples Screen

Click the link **Process Equipment Database** to select a **Process Equipment Database** sample.

The **Import Process Equipment Database** dialog box will open. Browse the directories to locate the sample file. The default location for samples files is: *C:\Program Files\Smar\Studio302\Samples\EquipDatabase*.

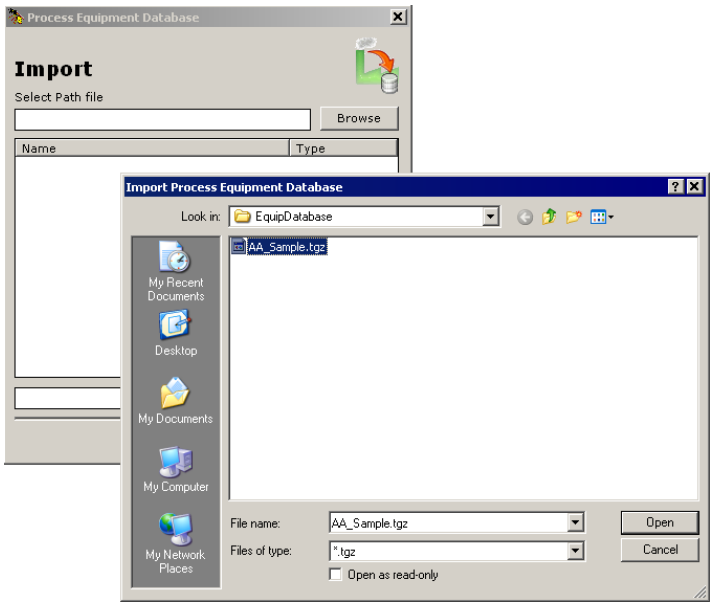


Figure 5.25. Selecting a Process Equipment Database Samples

Select the file icon and click **Ok** on the **Import Process Equipment Database** dialog box.

The **Import** procedure will be executed and the items from the sample file will be imported to the current **Process Equipment Database**. Click **Ok** to conclude.

ATTENTION
If there are conflicts between the tags of the nodes and types from the template, and the existent tags in the current **Process Equipment Database**, you will have to edit the tags. See section **Importing the Process Equipment Database**.

USERS AND GROUPS MANAGEMENT

Studio302 incorporates the Group of Users from the Windows Operating System. Windows' users can log to **Studio302** using the same login name and password.

The **SYSTEM302** default installation does not enable the secure mode for **Studio302**. To enable the secure mode and be able to manage users and groups, click **Settings > Security**, and click **Enable Login.**

When **Studio302** is initialized, the **Login** dialog box will open:

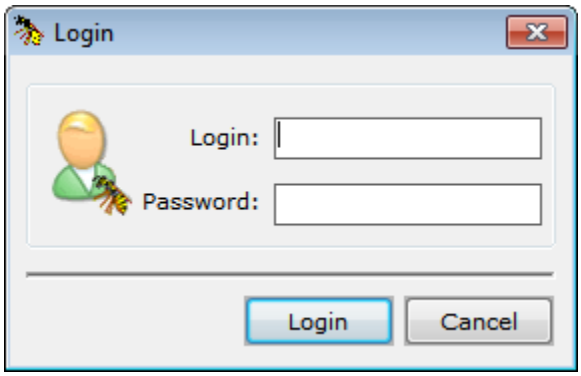


Figure 6.1. User Login

Using the **Group Management** window in **Studio302**, the System Administrator can configure the access rights and permissions for the other users.

To open the **Group Management** window, go to the **Settings** menu, select the option **Security** and then click **Group Management**.

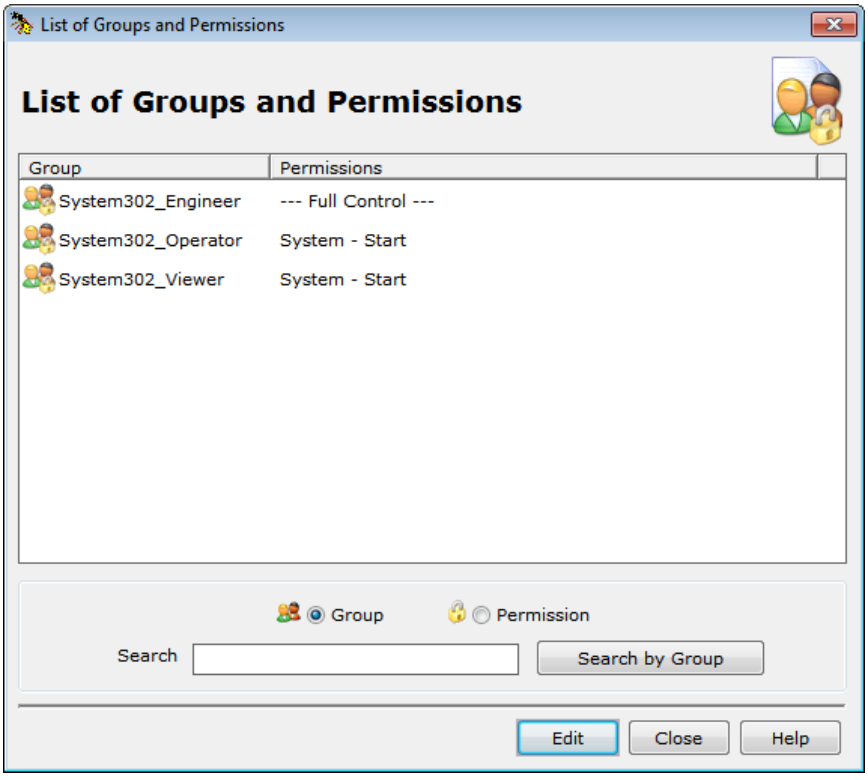


Figure 6.2. Groups and Permissions

Editing Group Permission

Select the group icon in the **Group Management** window and click **Edit** to configure the access rights for the users in that group.

The **Group Permission** dialog box will open:

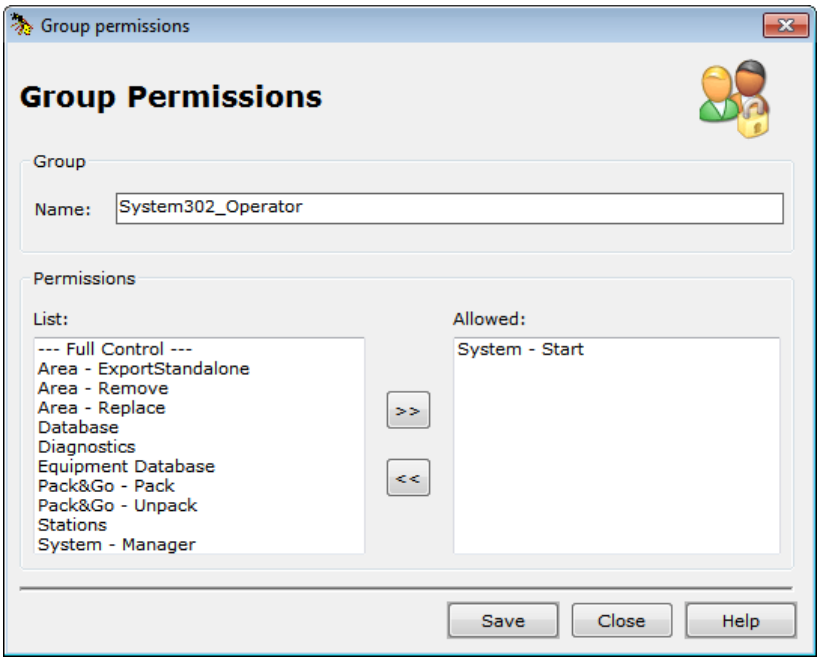


Figure 6.3. Editing Groups Permissions

To allow the group access to a system functionality, select the feature at the **List of Permissions** and click the button >>. The selected feature will be added to the **Allowed** list.

To deny the group access to a system functionality, select the feature at the **Allowed** list and click the button <<. The selected feature will be removed from the **Allowed** list.

Click the button **Save** to apply the changes to the group and click **Close** to conclude.

ATTENTION
You must configure the DCOM properties every time the **List of Permissions** is altered. Refer to the tutorial **Configuring the DCOM properties**.

Searching Groups

To search the name of a group:

1. Select the option **Group** at the bottom of the **Group Management** window.
2. Type the name of the group.
3. Click the button **Search by Group**.

To search the permission for any system functionality:

1. Select the option **Permission** at the bottom of the **Group Management** window.
2. Type the name of the system functionality.
3. Click the button **Search by Permission**.

HINT
The wild char '*' (asterisk) can be used to replace one or several characters. The asterisk may be placed anywhere in a search string, and the string may include several asterisks. The "?" (Question mark) can be also used as a wild char.

Multiuser Security

The **Multiuser Security** dialog box lists the users logged to the **Database Manager** in a multi-user scenario, indicating their IP addresses, status and the **Studio302** installation mode.

On the right lower corner of the **Studio302** window, double-click the **Multiuser Security** icon to open the dialog box.

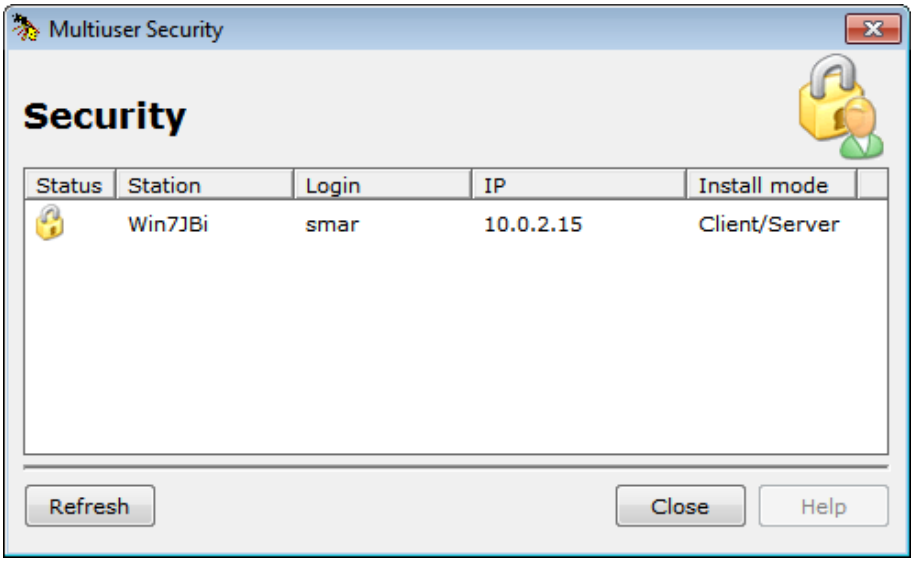


Figure 6.4. Multiuser Security

The **Multiuser Security** icon will blink on the **Studio302** window if there is a workstation in unsecured mode.

ATTENTION
The SQL Server 2005 must be installed on each workstation and the workstations must be using the same SQL data communication port.

MANAGEMENT TOOLS

Defining the Manufacturer ID

The **Manufacturer ID** is defined when creating a database. A database can only be created in the **Client/Server** mode, when the **Database Manager** is being executed. In the **Database** dialog box, select **New** and then click **Browse** on the **Manufacturer ID** box to open the **Manufacturer ID** dialog box.

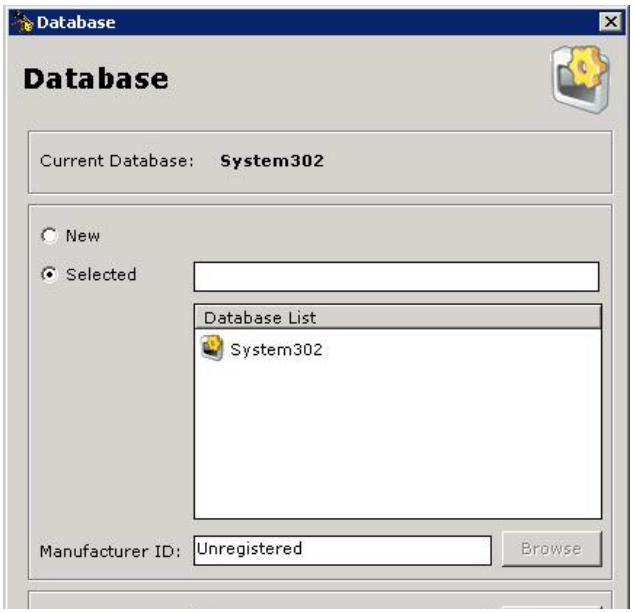


Figure 7.1. Creating a Database

All **Manufacturer IDs** registered on the **FFB Manager** are listed on the **All** tab. The **Recently** tab will list the most recent **Manufacturer IDs** selected by the user.

Click the icon corresponding to the name of the manufacturer to select it. The profile numbers related to the selected Manufacturer ID will be used in the new Database. Click **Ok** to conclude.

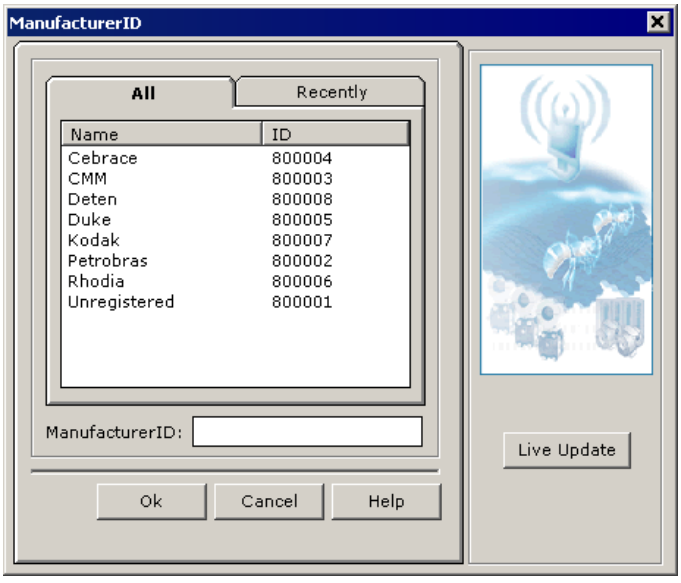


Figure 7.2. Defining the Manufacturer ID

IMPORTANT
To register a non-listed **Manufacturer ID**, please contact a **Smar** representative and request your **Manufacturer ID**.

Pack & Go

Packing Database Files

The **Pack** procedure in **Studio302** includes the project configuration files created in **Syscon**, configuration files created in **LogicView**, initialization files for these tools, **Block Support** and **Device Support** files, **Studio302** files related to the current *Database*, configuration files, description files and image files of devices used by the **Network Configurator** tool, initialization files for the OPC servers, and **ProcessView** configuration files consolidated by the **ProjectWorX** tool.

Those files are grouped in a single compacted file created by the **GZip Compactor** tool. The **GZip** installation file is included in the **SYSTEM302** Installation DVD, in the **Tools** folder. The compacted file has the extension **.tgz*, and it is compatible with **Winzip** and other applications.

This package can be sent and unpacked into another machine. Follow the procedure below to pack the Database files:

1. Click the button on the main toolbar. The **Pack & Go** dialog box will open.

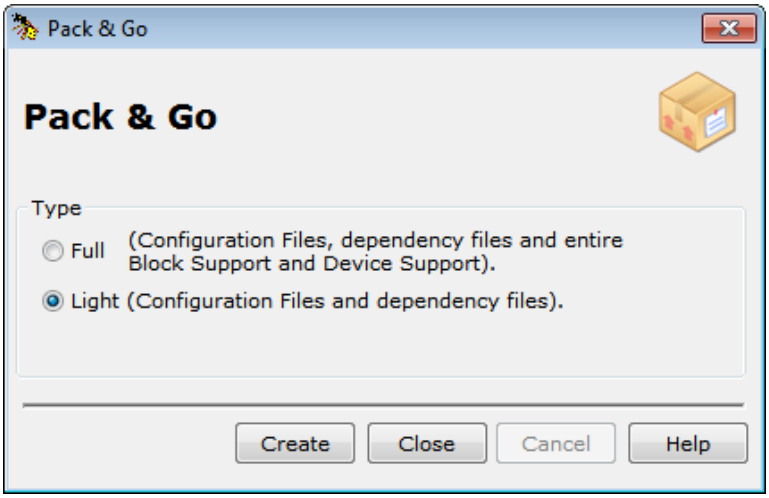


Figure 7.3. Pack & Go

2. Select the type of files that will be packed:
    - **Full**: all configuration files (**Studio302**, **Syscon**, **LogicView**, **Network Configurator** and **ProcessView**) imported to the current database, dependency files and the folders related to the **Block Support** and **Device Support** will be included in the package.
    - **Light**: all configuration files (**Studio302**, **Syscon**, **LogicView**, **Network Configurator** and **ProcessView**) imported to the current database will be included in the package but only the **Block Support** and **Device Support** folders used by the configuration files will be included in the package.
3. Click **Create**. A dialog box opens and the user selects the path to the compacted file. Browse de directories and select the destination folder.

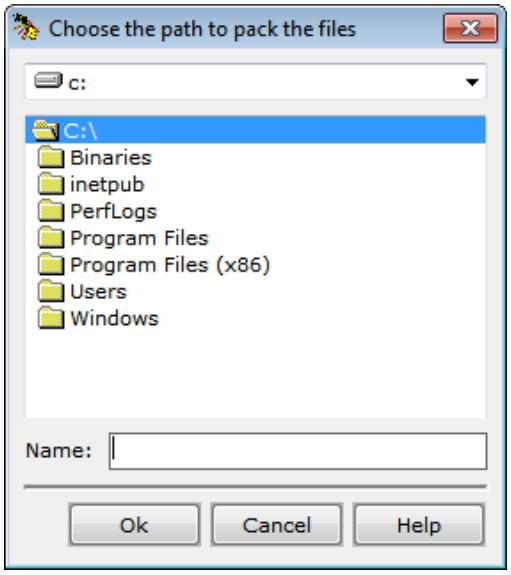


Figure 7.4. Selecting the Destination Folder

4. Type the name for the package and click **Ok**. The procedure to pack all files selected may take a few minutes. To cancel this procedure, click **Cancel** on the **Pack & Go** dialog box and the operation will be aborted.
5. A message box will appear informing the user if the operation was successful.
6. Click **Ok** to conclude.

Unpacking Database Files

The **Unpack** procedure will delete the list of areas in the current database and include the areas listed in the compacted file.

Syscon project configuration files where removed areas were created are not deleted from the working directory in the local machine, therefore after executing the **Unpack** procedure you may include areas from the previous database to the current one, importing the **Syscon** configuration files where those deleted areas were configured.

IMPORTANT
To execute the **Unpack** procedure, the current database name must be the same name used by the database from where the files were compacted and the same **ManufacturerID** must be selected. If the database or the **ManufacturerID** do not exist, it will be necessary to create them before executing the **Unpack**. If the database already exists, make sure it is the current database used by **Studio302**. If **Studio302** is being executed in **Multi-User** mode, it will be necessary to remove the files from the server database before unpacking the configuration files. Refer to the tutorial **Pack & Go procedure in Multi-User Mode** in this manual for further details about the procedure.

Follow this procedure to unpack the database files:

1. Click the button on the main toolbar. The **Unpack** dialog box will open.

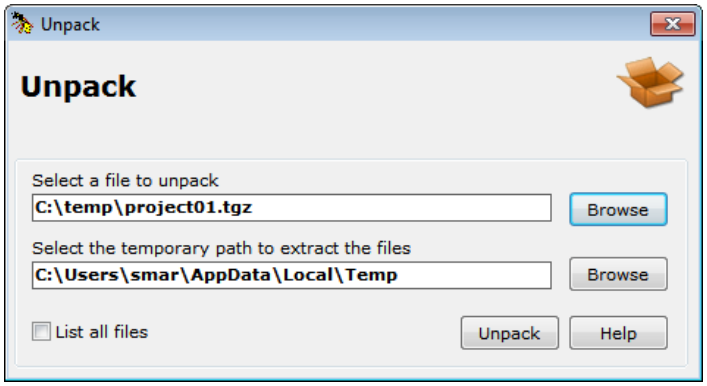


Figure 7.5. Unpacking Database Files

2. At the **Select a file to unpack**, click **Browse** to open the **Unpack files** dialog box and locate the compacted file. Click **Ok** to return to the **Unpack** dialog box.
3. At the **Select the temporary path to extract the files**, click **Browse** to open the **Extract to** dialog box and select the directory where the compacted file will be extracted.

   The selected folder will only be used as a temporary folder and will be automatically deleted after the **Unpack** procedure is complete. The files related to the configuration will be located in the **SYSTEM302** working directory.

   Click **Ok** to return to the **Unpack** dialog box.
4. Click **Unpack** on the **Unpack** dialog box to extract the files. If the option **List all files** is selected, a list of all files saved to the destination folder will be displayed at the end of the **Unpack** procedure.
5. A message box will appear informing the user that the operation was successful.
6. Click **Close** to conclude.

Unpack Trace

The **Unpack Trace** dialog box will open when the **Unpack** procedure detects inconsistencies in the compacted configuration files.

The **Trace** procedure verifies the following items:

- **Configuration files:** the **Trace** procedure checks if the **Syscon** configuration files were **locked**, **pending** or **outdated** when the **Pack** procedure was executed.
- **Logic files:** the **Trace** procedure checks if the ladder logics were **locked**, **pending** or **outdated** when the **Pack** procedure was executed.
- **Device Support and Block Support:** the **Trace** procedure checks if there are **Device Support, Block Support** and **Capabilities files** missing.

Right-click the **Unpack Trace** dialog box and click **Save** to save the information to a log file in HTML format.

License Monitor

The **License Monitor** window shows the number of licensed devices, *Process Equipment Database* items and blocks according to the user's software licenses.

ATTENTION
To check your authorized installed products, run the **LicenseView** application clicking the button on the **Applications** toolbar.

Click the button **License Monitor** on the **LicenseView** window and the following window will appear:

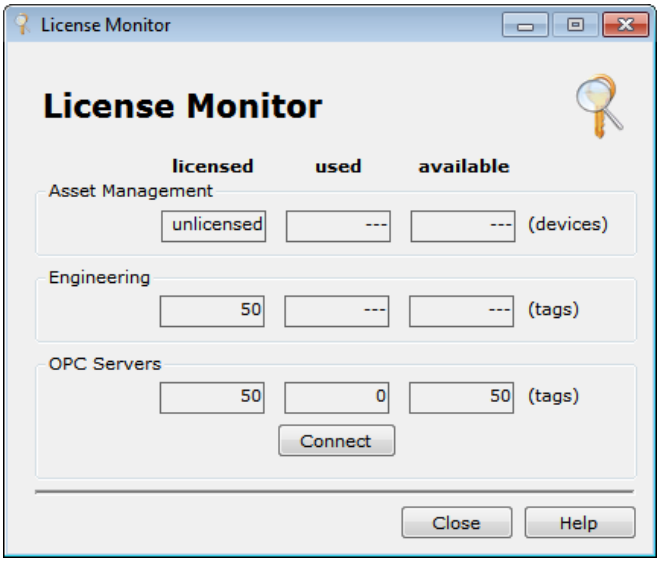


Figure 7.6. License Monitor window

- The column **Licensed** shows the number of points (devices, blocks or items) available for the registered license key.
- The column **Used** shows the number of points (devices, blocks or items) being used in the configuration files or the applications.
- The column **Available** shows the remaining number of points (devices, blocks or items) available for the registered license key.

If the number of **Available** points is higher than the average limit percentage defined by the user, that number will be displayed in orange. Likewise, if number of **Available** points is higher than the low limit percentage defined by the user, that number will be displayed in red. See section **Defining User's Preferences** for further information about defining the limit percentages.

Diagnostics

Click on the main toolbar to open the **Diagnostics** window and monitor devices with maintenance, diagnostic and tracking events, and the status of block links created using **Syscon**.

Devices Summary

The **Devices Summary** dialog box shows the number of devices with maintenance, diagnostic and tracking events.

Right-click the **Devices Summary** icon on the **Diagnostics** window and click the option **Start Devices Summary** to start communicating with **AssetView**.

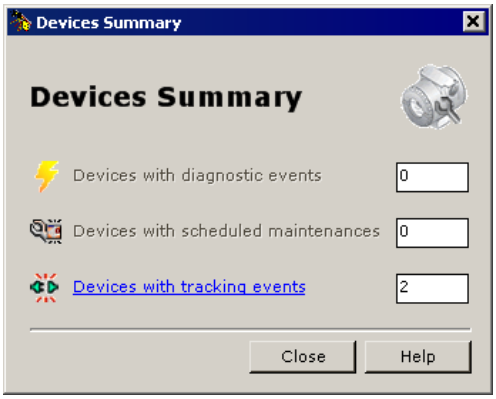


Figure 7.7. Devices Summary dialog box

- **Devices with Diagnostic Events:** indicates the number of devices with diagnostic event(s). Click this option to open the **Diagnostic View** page.
- **Devices with Scheduled Maintenances:** indicates the number of devices with scheduled maintenance(s). Click this option to open the **Maintenances** Page.
- **Devices with Tracking Events:** indicates the number of devices with tracking event(s). Click this option to open the **Tracking View** page.

Click each option to open the respective **AssetView** web page.

Live Links

The **Live Links** dialog box shows the block links created using **Syscon** and their state.

ATTENTION
The procedure to connect the links may take a few minutes depending on how many links were created in the project configuration files. To cancel the procedure that reads the status of the links, click **Abort** at the bottom of the **Live Links** dialog box. After closing the **Live Links** dialog box, wait a few seconds until **Server Manager** updates the monitoring information about the links. Otherwise, if the **Live Links** dialog box is quickly reopened, an error may occur while reading data from the OPC Servers and it will be necessary to restart **Server Manager**, close and open the **Diagnostic** window again.

On the **Customize** tab, select the links from the configuration projects and **Area Links** that should be monitored. See the example below:

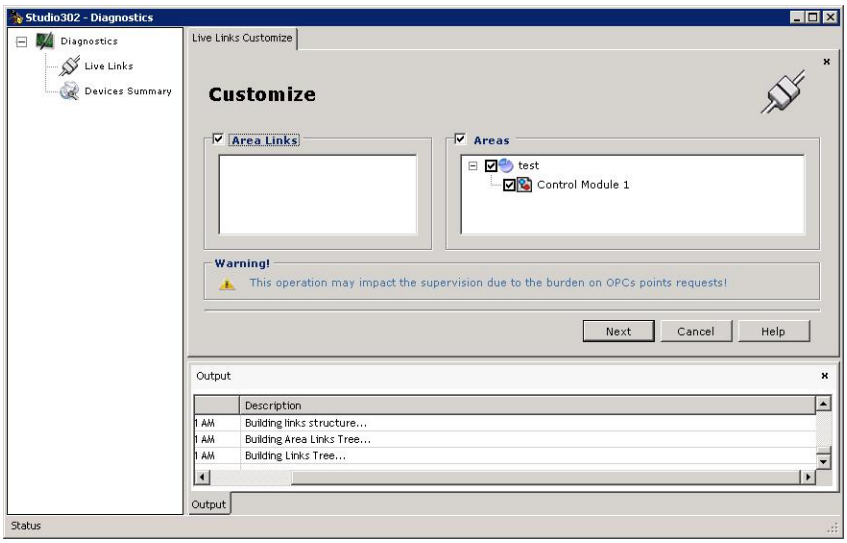


Figure 7.8. Selecting Links

Click **Next** to continue.

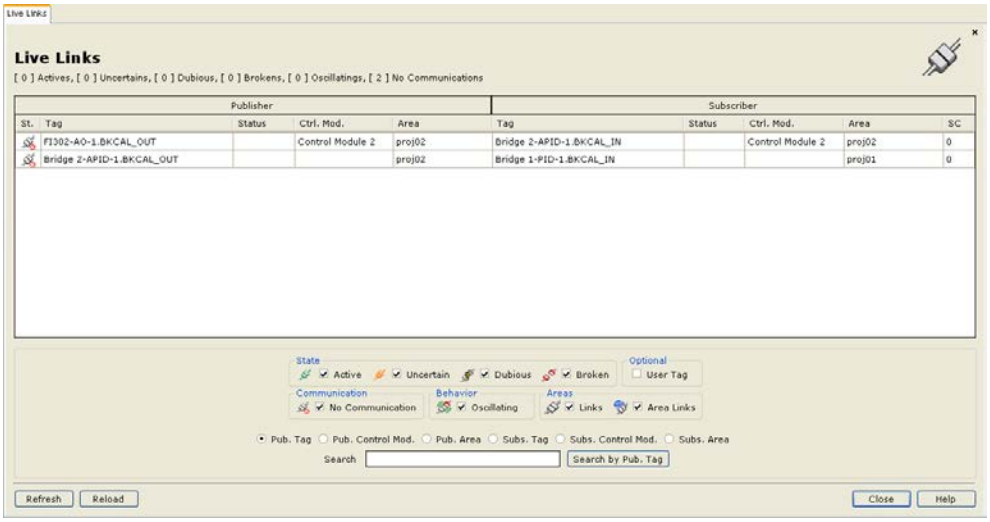


Figure 7.9. Live Links dialog box

The **SC** column (*State Change*) indicates the number of changes in the parameter status.

NOTE
You can set the time interval to wait until stabilizing the reading of the status of each link in the **Preferences** dialog box. See section **Defining User's Preferences**.

At the bottom of the **Live Links** dialog box, use the **States** filter to select the type of links that are listed:

- **Active:** shows only links that are communicating.
- **Uncertain:** shows links that the quality of the value is less than normal, but the value might be useful.
- **Dubious:** shows links where the status of the publisher and subscriber parameter is *out of service*.
- **Broken:** shows links that are communicating but the status in the subscriber is different from the publisher.

Use the **Behavior** filter and mark the option **Oscillating** to show links that oscillated their status (*active*, *broken* and *dubious*) during the monitoring period.

Use the filter **No Communication** at the **Live Links Comm** area to show links that are not communicating.

Right-click the parameter tag and select **Details** to open **Syscon** and edit the link on the Strategy window.

Right-click the parameter tag and select **Reset State Change** to reset the counter in the **SC** column related to the selected parameter. Or click **Reset All State Change** to reset all counters in the **SC** column.

Click **Refresh** to read the information from the OPC Servers.

IMPORTANT
Do not change the project configuration files in **Syscon** while the **Live List** dialog box is reading the information from the OPC Servers to update the status of the links, otherwise it will be necessary to reconnect all links again, clicking the button **Reconnect**.

At the **Search** box, search a specific parameter tag from the Publisher node, the Subscriber node or the control module. Use the wild char '*' (asterisk) to replace characters at the beginning and the end of the parameter tag. For example, to locate the parameters from a PID block, type **PID** on the **Search** box and click **Search**.

ADVANCED USERS - FILTERS FOR LINK TYPES

The filters for the link types in the **Live Links** dialog box were defined based on the value related to the quality of the communication between blocks. **Studio302** shows the status value represented by a number in decimal format. This value is interpreted in **Syscon** when opening the **Block Characterization** dialog box.

Click the link icon and select **Details** to open **Syscon** and check the quality of the communication specific for the selected block parameter.

The link can be classified as:

Broken Link: the link is classified as broken when:

- The status of the **Subscriber** parameter is:
  - `Bad::NoCommunicationWithLastUsableValue`
  - `Bad::NoCommunicationWithNoUsableValue`
- The status of the **Subscriber** parameter is `Bad::OutOfService` or different from the status of the **Publisher** parameter.
- The status of the **Subscriber** and **Publisher** parameters is inferior to 27, that is, the value is between 0 and 27 (refer to the descriptive table below).

Dubious Link: the link is classified as dubious when:

- The status of the **Subscriber** and **Publisher** parameters is `Bad::OutOfService`, which means the value is that is between 28 and 31 (refer to the descriptive table below).

Uncertain Link: the link is classified as uncertain when:

- The status of the **Subscriber** and **Publisher** parameters is `Uncertain`, which means the value is that is between 64 and 91 (refer to the descriptive table below).

Oscillating Link: the link is classified as oscillating when during monitoring (while the **Live Links** dialog box is open), the *Quality Change* of the link is not zero, indicating that the status of the link changed.

No Communication: the link is classified as not communicating when it is not possible to read the values of the **Publisher** and/or **Subscriber** parameters.

Active Link: to be classified as an active link:

- The status of the **Subscriber** parameter must be the same status from the **Publisher** parameter.
- Both values, from the status of the **Subscriber** parameter and the **Publisher** parameter, must be above 64 (refer to the descriptive table below).

Descriptive Table for the Status value of the Block Parameters

The figure in the example below shows the value of the *Status* for the parameter **IN** of the block **APID**, of the **LD302**, interpreted in the **Block Characterization** dialog box, in **Syscon**:

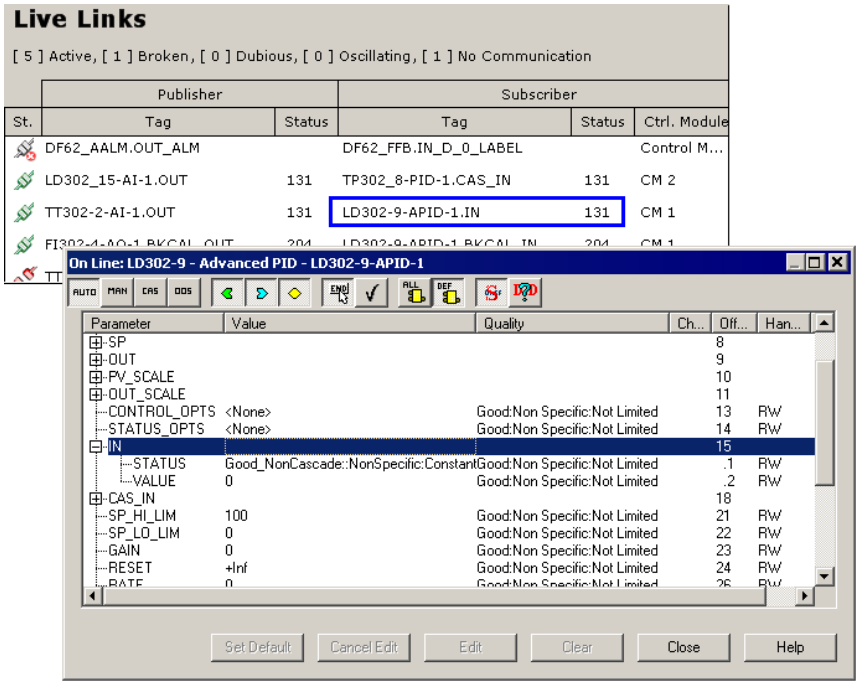


Figure 7.10. Example of a parameter status

The values of the status are described below:

Decimal Value	Status of the parameter indicated in *Syscon*	Hexadecimal Value
0	Bad::NonSpecific:NotLimited	(0x0)
1	Bad::NonSpecific:LowLimited	(0x1)
2	Bad::NonSpecific:HighLimited	(0x2)
3	Bad::NonSpecific:Constant	(0x3)
4	Bad::ConfigurationError:NotLimited	(0x4)
5	Bad::ConfigurationError:LowLimited	(0x5)
6	Bad::ConfigurationError:HighLimited	(0x6)
7	Bad::ConfigurationError:Constant	(0x7)
8	Bad::NotConnected:NotLimited	(0x8)
9	Bad::NotConnected:LowLimited	(0x9)
10	Bad::NotConnected:HighLimited	(0xa)
11	Bad::NotConnected:Constant	(0xb)
12	Bad::DeviceFailure:NotLimited	(0xc)
13	Bad::DeviceFailure:LowLimited	(0xd)
14	Bad::DeviceFailure:HighLimited	(0xe)
15	Bad::DeviceFailure:Constant	(0xf)
16	Bad::SensorFailure:NotLimited	(0x10)
17	Bad::SensorFailure:LowLimited	(0x11)
18	Bad::SensorFailure:HighLimited	(0x12)
19	Bad::SensorFailure:Constant	(0x13)
20	Bad::NoComm_WithLastUsableValue:NotLimited	(0x14)
21	Bad::NoComm_WithLastUsableValue:LowLimited	(0x15)
22	Bad::NoComm_WithLastUsableValue:HighLimited	(0x16)
23	Bad::NoComm_WithLastUsableValue:Constant	(0x17)

Decimal Value	Status of the parameter indicated in *Syscon*	Hexadecimal Value
24	Bad::NoComm_WithNoUsableValue:NotLimited	(0x18)
25	Bad::NoComm_WithNoUsableValue:LowLimited	(0x19)
26	Bad::NoComm_WithNoUsableValue:HighLimited	(0x1a)
27	Bad::NoComm_WithNoUsableValue:Constant	(0x1b)
28	Bad::OutOfService:NotLimited	(0x1c)
29	Bad::OutOfService:LowLimited	(0x1d)
30	Bad::OutOfService:HighLimited	(0x1e)
31	Bad::OutOfService:Constant	(0x1f)
64	Uncertain::NonSpecific:NotLimited	(0x40)
65	Uncertain::NonSpecific:LowLimited	(0x41)
66	Uncertain::NonSpecific:HighLimited	(0x42)
67	Uncertain::NonSpecific:Constant	(0x43)
68	Uncertain::LastUsableValue:NotLimited	(0x44)
69	Uncertain::LastUsableValue:LowLimited	(0x45)
70	Uncertain::LastUsableValue:HighLimited	(0x46)
71	Uncertain::LastUsableValue:Constant	(0x47)
72	Uncertain::SubstituteValue:NotLimited	(0x48)
73	Uncertain::SubstituteValue:LowLimited	(0x49)
74	Uncertain::SubstituteValue:HighLimited	(0x4a)
75	Uncertain::SubstituteValue:Constant	(0x4b)
76	Uncertain::InitialValue:NotLimited	(0x4c)
77	Uncertain::InitialValue:LowLimited	(0x4d)
78	Uncertain::InitialValue:HighLimited	(0x4e)
79	Uncertain::InitialValue:Constant	(0x4f)
84	Uncertain::EngUnitRangeViolation:NotLimited	(0x54)
85	Uncertain::EngUnitRangeViolation:LowLimited	(0x55)
87	Uncertain::EngUnitRangeViolation:Constant	(0x57)
88	Uncertain::Subnormal:NotLimited	(0x58)
89	Uncertain::Subnormal:LowLimited	(0x59)
90	Uncertain::Subnormal:HighLimited	(0x5a)
91	Uncertain::Subnormal:Constant	(0x5b)
128	Good_NonCascade::NonSpecific:NotLimited	(0x80)
129	Good_NonCascade::NonSpecific:LowLimited	(0x81)
130	Good_NonCascade::NonSpecific:HighLimited	(0x82)
131	Good_NonCascade::NonSpecific:Constant	(0x83)
135	Good_NonCascade::ActiveBlockAlarm:Constant	(0x87)
192	Good_Cascade::NonSpecific:NotLimited	(0xc0)
193	Good_Cascade::NonSpecific:LowLimited	(0xc1)
194	Good_Cascade::NonSpecific:HighLimited	(0xc2)
195	Good_Cascade::NonSpecific:Constant	(0xc3)
204	Good_Cascade::NotInvited:NotLimited	(0xcc)
205	Good_Cascade::NotInvited:LowLimited	(0xcd)
206	Good_Cascade::NotInvited:HighLimited	(0xce)
207	Good_Cascade::NotInvited:Constant	(0xcf)

Decimal Value	Status of the parameter indicated in *Syscon*	Hexadecimal Value
208	Good_Cascade::NotSelected:NotLimited	(0xd0)
209	Good_Cascade::NotSelected:LowLimited	(0xd1)
210	Good_Cascade::NotSelected:HighLimited	(0xd2)
211	Good_Cascade::NotSelected:Constant	(0xd3)
212	Good_Cascade::DoNotSelect:NotLimited	(0xd4)
213	Good_Cascade::DoNotSelect:LowLimited	(0xd5)
214	Good_Cascade::DoNotSelect:HighLimited	(0xd6)
215	Good_Cascade::DoNotSelect:Constant	(0xd7)
216	Good_Cascade::LocalOverride:NotLimited	(0xd8)
217	Good_Cascade::LocalOverride:LowLimited	(0xd9)
218	Good_Cascade::LocalOverride:HighLimited	(0xda)
219	Good_Cascade::LocalOverride:Constant	(0xdb)
220	Good_Cascade::FailSafeActive:NotLimited	(0xdc)
221	Good_Cascade::FailSafeActive:LowLimited	(0xdd)
222	Good_Cascade::FailSafeActive:HighLimited	(0xde)
223	Good_Cascade::FailSafeActive:Constant	(0xdf)
224	Good_Cascade::InitiateFailSafe:NotLimited	(0xe0)
225	Good_Cascade::InitiateFailSafe:LowLimited	(0xe1)
226	Good_Cascade::InitiateFailSafe:HighLimited	(0xe2)
227	Good_Cascade::InitiateFailSafe:Constant	(0xe3)

Wise Inspector

The **Wise Inspector** window lists all **Inventory Reports** saved on the database.

Figure 7.11. Example of a parameter status

The **Inventory Report** lists all files located in the **SYSTEM302** installation folder and indicates the hardware characteristics for the local machine (where **SYSTEM302** was installed). This report has two sections. The **Hardware** section shows the configuration of the local machine, including the machine name, operating system version, hard disk space, network adapters, etc. The **Software** section lists all files related to each installed **SYSTEM302** application, including the file name, installation path, date, size and file version.

To generate an **Inventory Report**, go to the **Tools** menu and click **Reports > Inventory**, or click the button to open the **Choose Report** dialog box and click **Inventory**.

You can also configure **Studio302** to generate the **Inventory Report** each time **Studio302** is launched. On the **File** menu, click **Preferences**. On the **Preferences** dialog box, click the **Reports** tab and mark the option **Generate an Inventory Report when Studio302 is launched**.

You can select only two reports to compare system configurations.

On the **Tools** menu, click **Wise Inspector** to open the **Wise Inspector** window. Mark the two reports you want to compare and click **Compare**. See the example below:

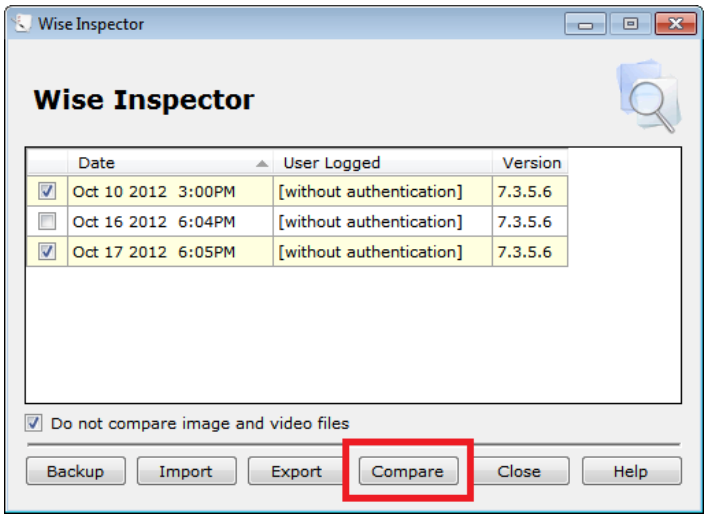


Figure 7.12. Comparing Inventory Reports

This procedure may take some minutes. Click **Background** on the progress dialog box to execute this procedure in background while you continue using **Studio302**. Click **Abort** on the **Wise Inspector** window at any time to cancel the comparison.

When the procedure is concluded, the report containing the differences between the selected **Inventory Reports** will be displayed. Differences are generated according to three cases:

1. If a file exists on the first **Inventory Report** and does not exist on the second, the final report will indicate the file as *not found*.
2. A new file does not exist on the first **Inventory Report**.
3. A modified file, that is, the file exists on the first **Inventory Report** and it was modified.

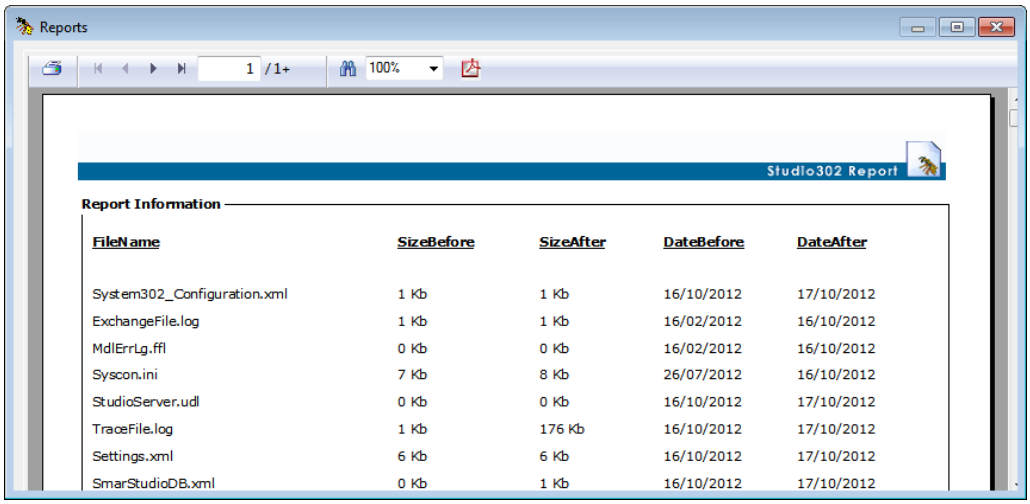


Figure 7.13. Report Information

On the **Reports** window, click to print the report or click the button to save the report in PDF format.

Importing an Inventory Report

You can import the information from an **Inventory Report** previously saved on the workstation, and then compare this report to other **Inventory Reports** available.

On the **Tools** menu, click **Wise Inspector** to open the **Wise Inspector** window. Click the button **Import**.

On the **Open** dialog box, locate the folder where the file was saved. Double-click the file icon to import the report to the **Wise Inspector** window.

Exporting an Inventory Report

You can export the information from an Inventory Report and save it to a file.

On the **Tools** menu, click **Wise Inspector** to open the **Wise Inspector** window. Select the **Inventory Report** available and click **Export**. You can select one or more reports at the same time, each report will be export as one file.

On the **Browse for Folder** dialog box, select the folder where the files will be saved. Click **Ok** to export the selected file(s). The file extension will be "**.wif*".

Wise Inspector Backup

The **Wise Inspector Backup** is a new feature in **Studio302** version 1.11 on. This feature creates a backup from a set of **SYSTEM302** files by comparing two **Inventory Reports**.

How to use the Wise Inspector Backup?

From **SYSTEM302 version 7.3.5** on, when launching **Studio302** for the first time, an **Inventory Report** related to the installation is automatically generated, and the information is store on the *Inventory* database.

After the **SYSTEM302** installation/configuration, it might have been necessary to alter an element from the original installation, which means a component may have been added or altered due to improvements or specific customizations made by the **Smar Tech Support** team.

Once the alteration is validated, another **Inventory Report** related to the installation should be generated. This report will also be stored on the *Inventory* database.

How to generate a backup?

On the **Tools** menu, click **Wise Inspector** to open the **Wise Inspector** window. Click the button **Backup**. The tool will automatically select the first and the last **Inventory Report** from the current **SYSTEM302** version.

You will save the information about the differences and the altered components in a compacted file. This file can be stored on the current workstation, and could be used for comparison if it is necessary to reinstall **SYSTEM302**. These records of the **SYSTEM302** validated installation and the components that were altered follow the same directory structure of the **Smar** directory.

On the **Save As** dialog box, select the folder where the file will be saved and type the name for the compacted file. Click **Save** to continue. This procedure may take some minutes. Click **Background** on the progress dialog box to execute this procedure in background while you continue using **Studio302**.

At the end of the backup procedure, the compacted file is generated in zip format. This file contains:

- the **Source** directory: files are copied according to the **SYSTEM302** directory structure, making it easy to locate files that were altered.
- the **info.txt** file: this file contains the information related to the files that were copied.

Section 8

TASKS

Area Link Tool

Click the button to select the **Area Link Tool** application.

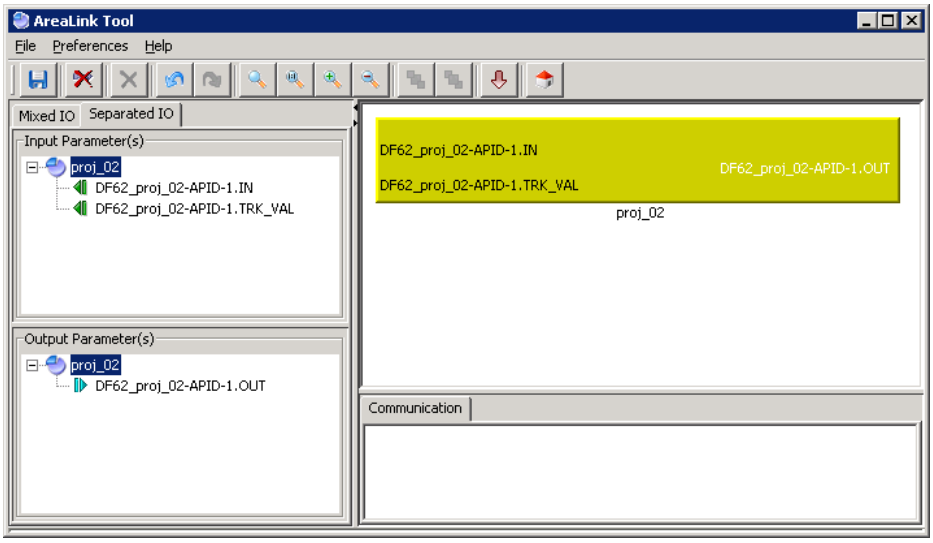


Figure 8.1. Area Link Tool Window

Refer to the **Area Link Tool Help** for further details.

AssetView

Click the button to select the **AssetView** Application. The following dialog box will open:

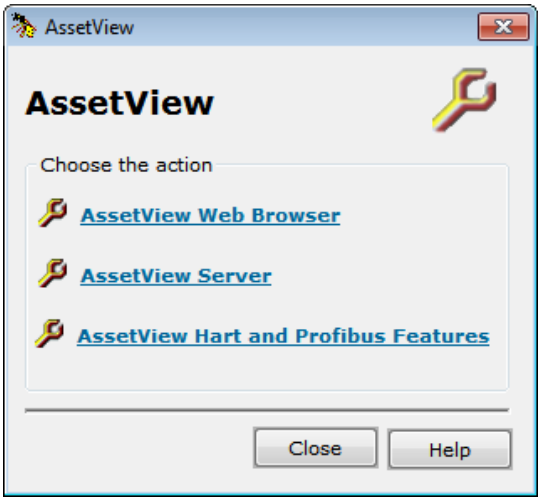


Figure 8.2. Initializing AssetView

Click the option **AssetView Web Browser** to launch the Internet Explorer browser and navigate through the **AssetView** pages related to the configurations imported to the current database.

Click the option **AssetView Server** to run the application and manage the device information on the **AssetView** database. Refer to the **AssetView User's Manual** for further details.

Click the option **AssetView Hart and Profibus Features** to run the **FDT Hart Configurator** tool and manage the topology and DTMs from Hart and Profibus devices.

DFI Diver

Click the button to launch the **DFI Diver** application and select a DF51 card to debug.

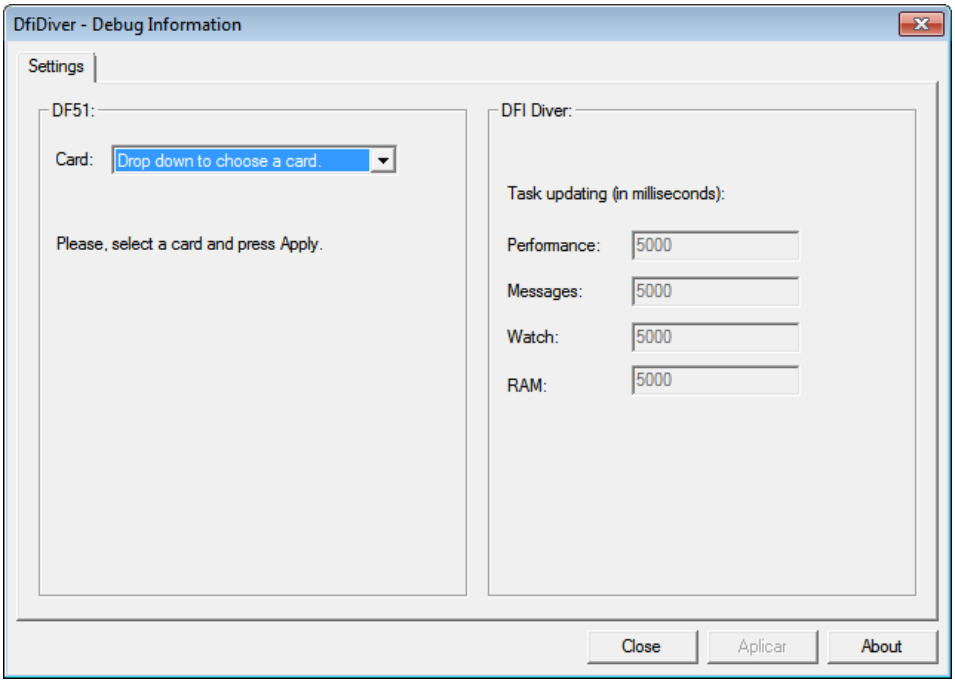


Figure 8.3. Initializing DFI Diver

Select the DF51 card and click **Apply** to apply the debug the card.

FBTools

Click the button to launch the **FBTools Wizard.** This is an application which allows the firmware upgrade of any Smar field device - FOUNDATION™ fieldbus and PROFIBUS PA, PCI302 cards, DFI302 controllers and communication gateways such as the FB700, MB700, and HI302. This tool also allows configuring TCP/IP properties of those modules network interfaces. Refer to the **FBTools Help** for further details.

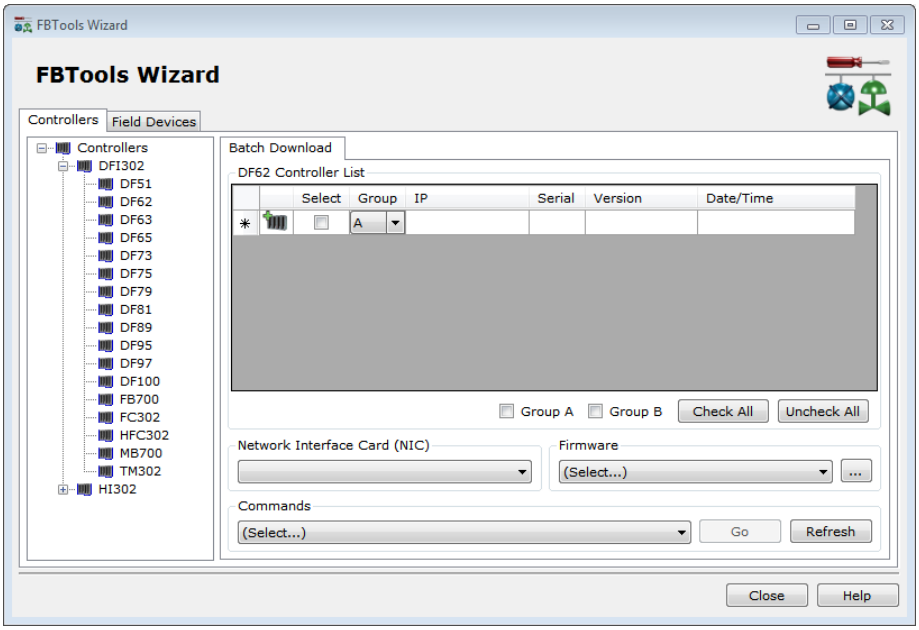


Figure 8.4. Initializing FBTools

FBView

Click the button to launch the **FBView** application and analyze the network communication. Refer to the **FBView User's Manual** for further information.

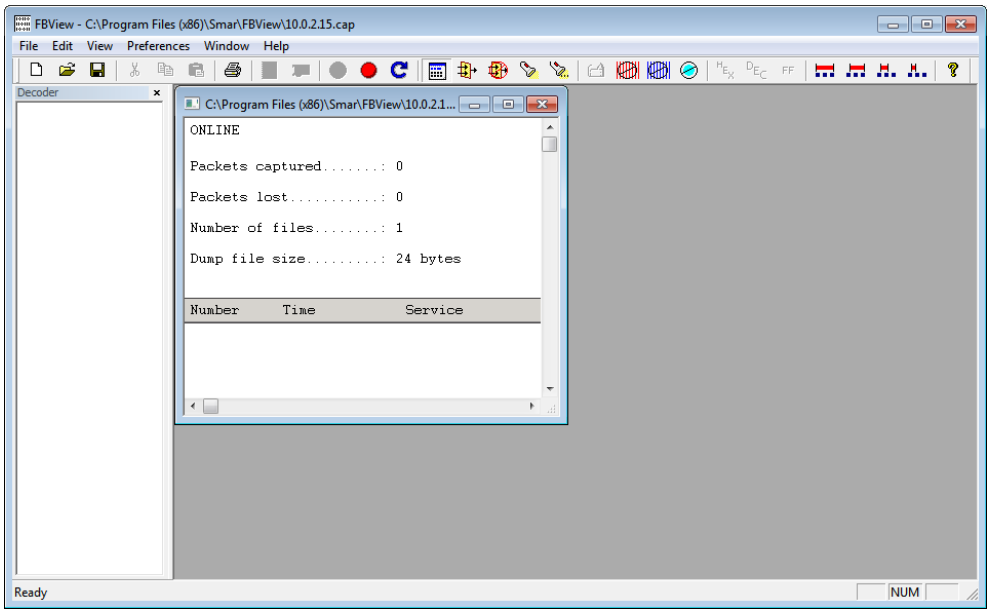


Figure 8.5. Initializing FBView

FDT Hart Configurator

Click the button to launch the **FDT HART Configurator**.

This FDT tool manages specific functions for each instrument, providing online asset management.

Refer to the **FDT HART Configurator Help** for further details.

LicenseView

Click the button to run the **LicenseView** application and authorize the installed products.

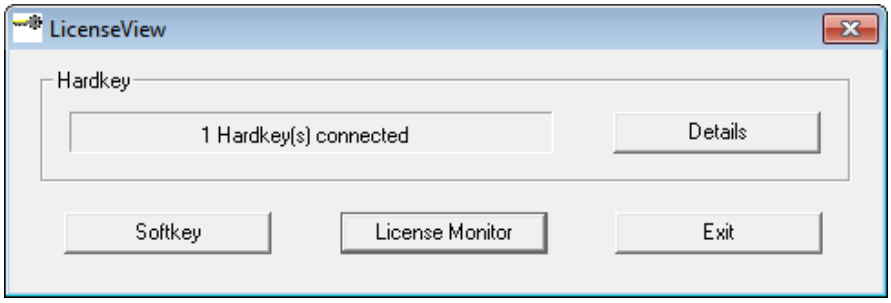


Figure 8.6. Initializing LicenseView

Refer to the **SYSTEM302 HANDBOOK** for further information about licenses.

LogicView

Click the button to open the dialog box to select the **Action Mode** for the **LogicView** application:

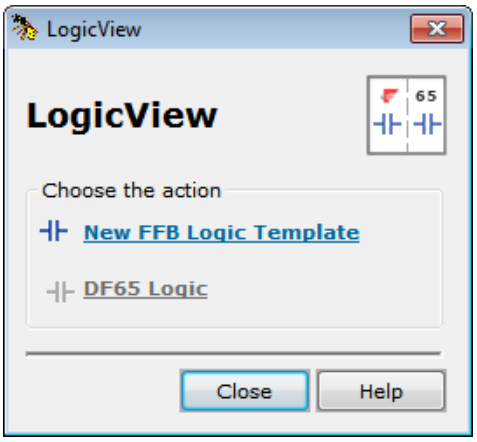


Figure 8.7. Initializing LogicView

- **New FFB Logic Template:** opens **LogicView for FFB** to configure and edit the FFB templates.
- **DF65 Logic:** opens **LogicView** to configure the logic for the coprocessor DF65.

Refer to the **LogicView User's Manual** for further information.

Profibus View

Click the button to open the **ProfibusView** dialog box and configure a Profibus device. Refer to section **Detecting a Profibus Device** on the **Studio302 User's Manual** for further details.

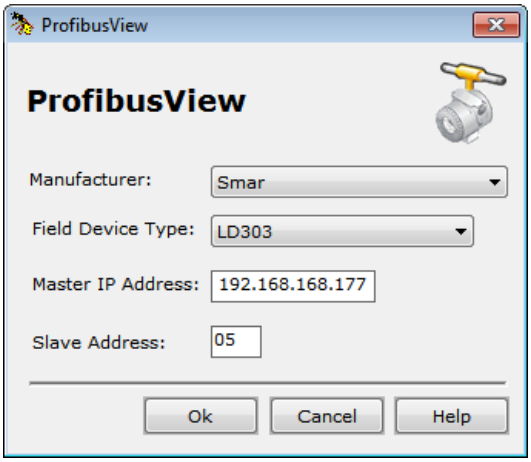


Figure 8.8. Opening the Profibus View dialog box

ProcessView

Click the button to open the **ProjectWorX** application and organize the **ProcessView** configuration and supervision files.

Refer to the **ProcessView User's Manuals** for further information.

ServerManager

Click the button to open the **ServerManager** window. When an OPC server is executing, the icon of the **ServerManager** will change to green ( ) at the Windows taskbar. If the server is stopped, the icon of the **ServerManager** will change to red ( ) at the Windows taskbar.

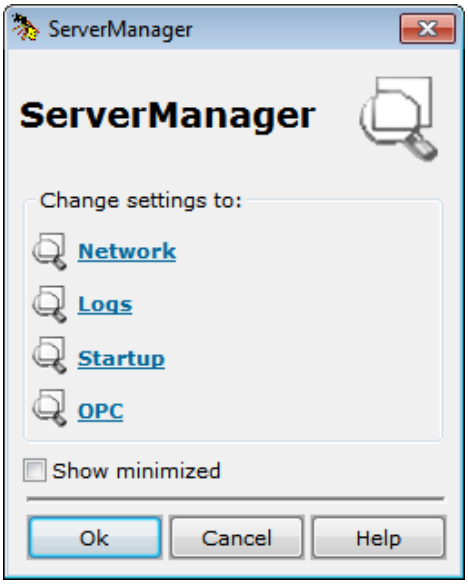


Figure 8.9. Initializing the Server Manager

Refer to the **Tutorial ServerManager** for further details about this application.

ATTENTION
When closing the **ServerManager** application, wait a few seconds before initializing it again. This way, the list of processes executed by the operational system will be updated and the **ServerManager** application will be removed from this list. If the user tries to execute the **ServerManager** right after closing the application, the **ServerManager** icon will not appear on the Windows taskbar because the process will be still active on the list of processes.

SimulationView

Click the button to open the **SimulationView** that is a control strategy simulator developed specifically to simulate control strategies with Foundation™ Fieldbus function blocks and ladder logic IEC 61131-3 standard.

Refer to the **SimulationView Manual** for further information.

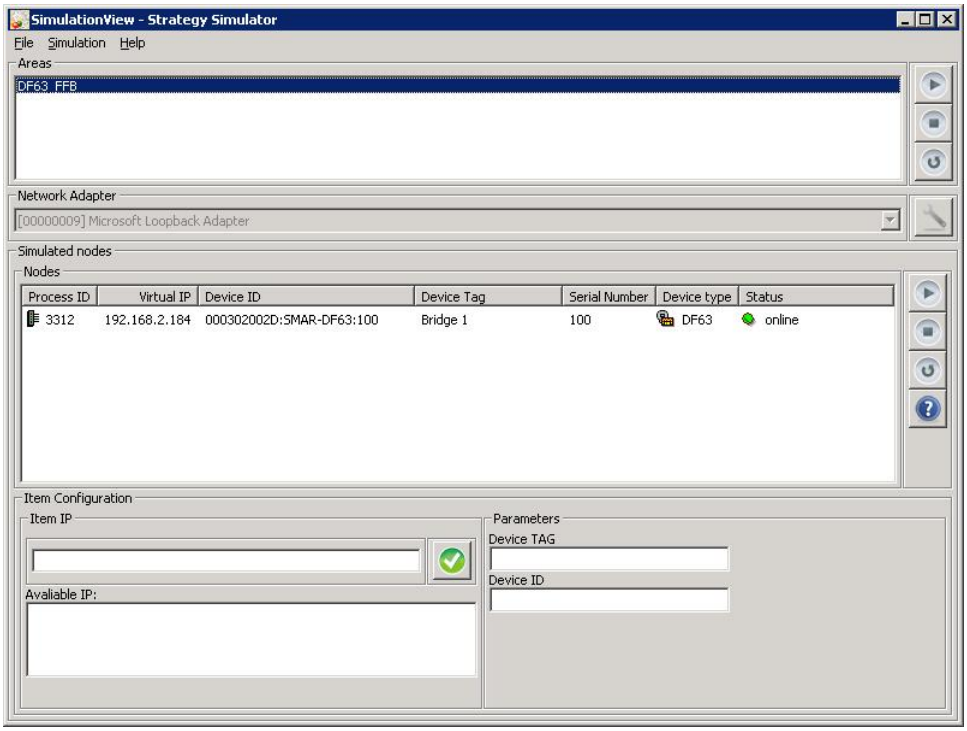


Figure 8.10. Initializing the SimulationView

Syscon

Click the button to launch the **Syscon** application and edit a project configuration. Refer to the **Syscon User's Manual** for further details.

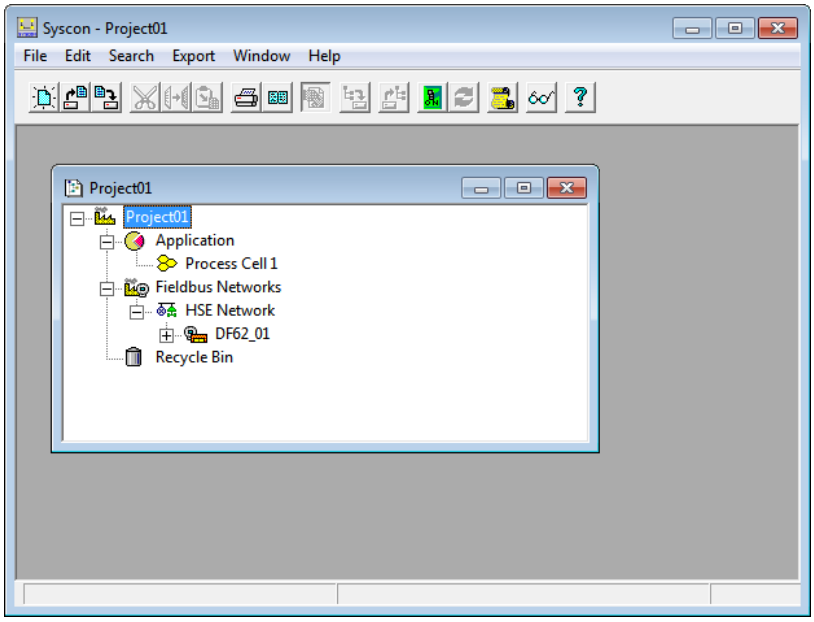


Figure 8.11. Initializing Syscon

TagList

Click the button to launch the **TagList** application and configure the database for the **DF65** OPC Server.

Figure 8.12. Initializing TagList

TagView

Click the button to launch the **TagView** application and monitors the Function Blocks and their parameters.

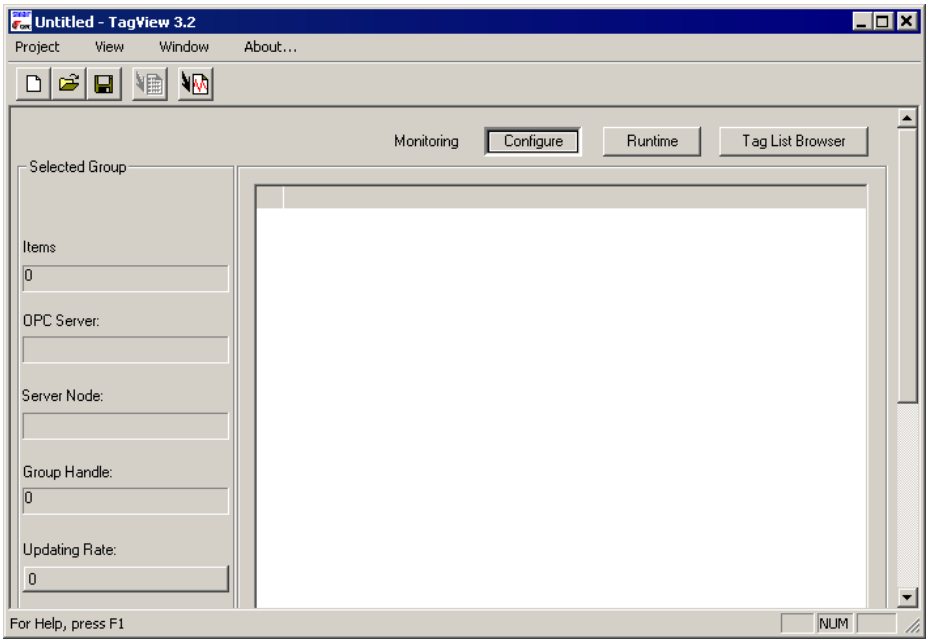


Figure 8.13. Initializing TagView

System302 Documentation

Click the button to open the **SYSTEM302 Documentation Browser**.

If the documentation package was not installed during the **SYSTEM302** installation, a dialog box will open and the user should locate the main browser file on the **Installation DVD**. Select the file **intro.exe** and click **Ok** to open the documentation application.

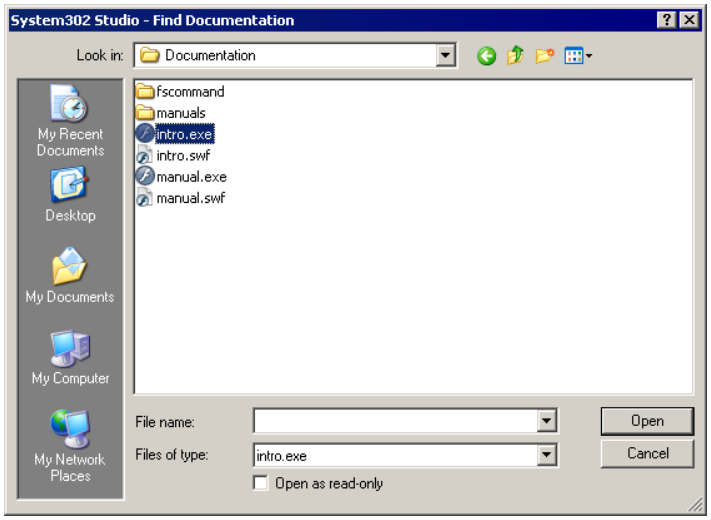


Figure 8.14. Locating the Main Documentation Page

ATTENTION
It is necessary to install the **Adobe Flash Player** on the local machine to execute the documentation browser application. The **Adobe Flash Player** installation file is available at the Adobe website: http://www.adobe.com/products/flashplayer/. To open the files of the user's manuals, it is necessary to install **Adobe Acrobat Reader** version 7.0 or higher. The installation file is available on the **SYSTEM302 Installation DVD**, on the **Tools** folder.

Section 9

TUTORIAL: DEVICE MAINTENANCE

Replacing the Device in the Plant

This section describes the steps of the device maintenance in the plant.

When the fieldbus device is replaced in the plant, first it must be decommissioned using the configuration tool, and then the device can be removed from the plant and a new device is connected. To conclude this procedure, the new device must be commissioned by the configuration tool.

The **Studio302** wizard guides the user during the maintenance procedure, interacting with the configuration tool and assisting the user.

Step 1: Decommissioning the device

In the **Studio302** window, open the device list expanding the icon **Network Devices** and clicking **Field Devices** in the topology tree.

The list of the devices will open. Right-click the icon of the device that will be replaced and click **Decommission**.

Wait a few seconds while **Syscon** is decommissioning the device. When this procedure is complete, the device status will be updated in the **Devices** dialog box.

After decommissioning the device, replace the physical instrument with the new equipment in the plant.

Step 2: Detecting the new device

IMPORTANT
Remember that the device detection service must be started for the new device installed in the plant to be detected. If the **Detect Device** icon is not activated in the Windows taskbar, go to the **Settings** menu in the **Studio302** window, click **Communications** to open the **Communication Settings** dialog box, select the **Services** tab and click **Start** to activate the device detection service. It is also possible to initialize the device detection service clicking the **Online/Offline Communication** button on the main toolbar.

When a new device is connected to the plant communication channel, the **Studio302** icon blinks in the Windows taskbar.

Open the **Studio302** window and the **New Device Detected** message box will open.

Click **Yes** to commission the new device. The commissioning process will enable the device communication with the plant control.

Step 3: Commissioning the Device

Syscon will be automatically executed and the **Commission** dialog box will open.

Click the button to open the list of device IDs available.

Select the icon corresponding to the new device and click **Ok** to close this dialog box and return to the **Commission** dialog box. Click **Ok** again and wait until the device is commissioned.

The message box will open informing the user the commissioning procedure was completed.

Step 4: Download

After commissioning the new device, a message box will open informing the user that it will be necessary to send the information about the device configuration to the physical instrument in the plant. Click **Yes** to download the configuration and conclude the device maintenance.

If any attribute of the new device installed in the plant differs from the configuration of the virtual device in the project file, the message below will open after the device is commissioned, alerting the user that it will be necessary to execute the **Exchange Device** procedure to check the inconsistencies, incompatibilities and the instability of the device.

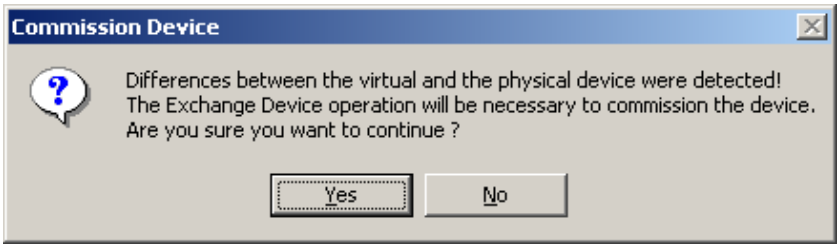

Commission Device
Differences between the virtual and the physical device were detected!
The Exchange Device operation will be necessary to commission the device.
Are you sure you want to continue ?
Yes
No

Figure 9.1. Editing Groups Permissions

Click **Yes** to analyze the differences of the devices and select the blocks and parameters compatible to the new device.

Refer to the **Syscon User's Manual** for further details about the **Exchange Device** procedure.

After confirming the alterations on the device configuration, download the configuration to conclude the device maintenance.

Appendix A

SERVERMANAGER

The **ServerManager** configures the parameters for the plant network communication. Parameters can be configured before starting the online communication, and some parameters can be modified while the system is already operating.

The **ServerManager** is executed from the **Studio302** toolbar. Note that an option can be configured in order to also execute **ServerManager** automatically every time an OPC server is accessed.

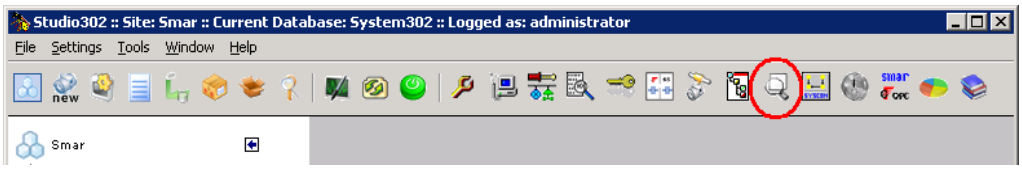


Figure A.1. ServerManager on the Studio302 Toolbar

IMPORTANT
Parameters available in **ServerManager** are read from the files **SmarOleServer.ini**, **IDShell HSE.ini** and **SnmpOpcServer.ini**. Any alterations made directly on these files, for other parameters non-accessible through **ServerManager**, without previous knowledge or technical orientation, may cause system malfunctioning.

The sections below describe the **ServerManager** interface and its main characteristic.

User Interface

Click the button **ServerManager** on the **Studio302** toolbar and the following dialog box will open:

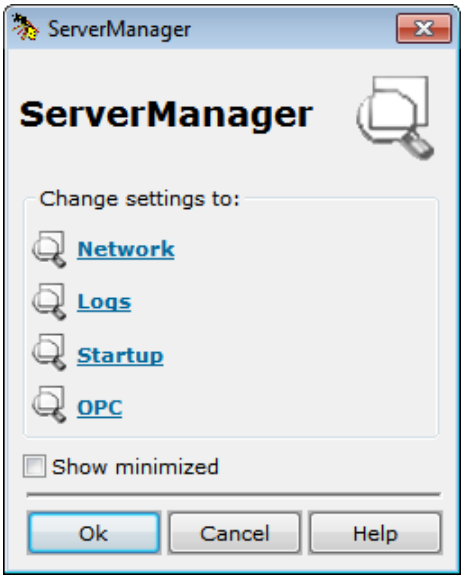


Figure A.2. Starting the *ServerManager*

Select one of the options according to the configuration settings to be edited:

- **Network:** configure the network interface cards used by the **ServerManager**, and also redundancy, advanced parameters for HSE network, specific parameters for SNTP and parameters for the case of a system composed by RTUs.

- **Logs:** configure the options to enable or disable the event logs.
- **Startup:** configure the **ServerManager** to activate the OPC servers automatically when the operational system starts, and also read the tag list to create a cache for the DA server (DFI or HSE).
- **OPC:** configure specific parameters for the *Alarms and Events*, *SNMP* and *HDA* servers. Access to wrapper of OPC UA standard.

While being executed, **ServerManager** alerts the user about events related to system components through its icon on Windows taskbar. There are four possible events indicated by the **ServerManager** icon:

- Error in the COM/DCOM configuration;
- Event generated by an application, creating a **.sml* log file;
- Database from *A&E OPC Server* must be updated;
- A new dump file (from a fatal exception of one of the components related to the OPC Servers) was generated by the system (see section **Displaying Log Files** for details).

See the example in the figure below:

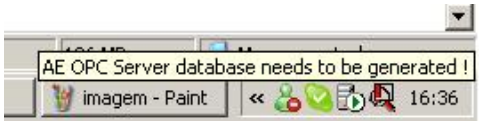


Figure A.3. Events in *ServerManager*

When an OPC server is active, **ServerManager** icon changes to green ( ) on the Windows taskbar. On the other hand, if the server is stopped, **ServerManager** icon changes to red ( ) on the Windows taskbar.

The figure below shows the **ServerManager** interface:

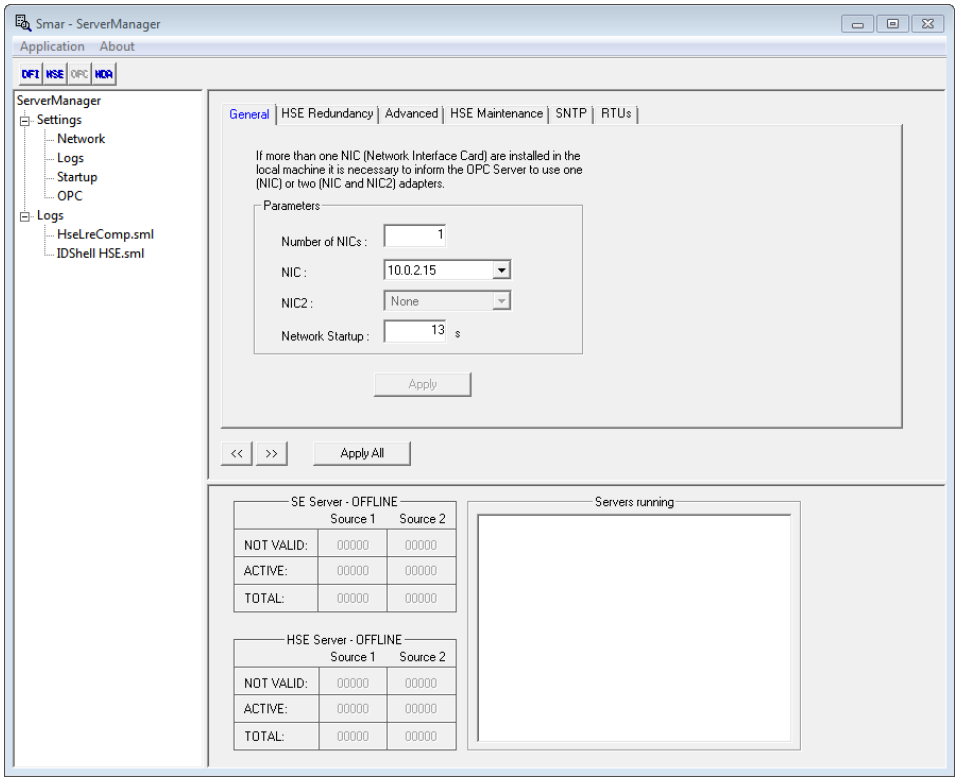


Figure A.4. ServerManager Window

The panel on the left shows the configuration options and the reports generated during the communication server operation.

The panel on the right shows the configuration parameters according to the option selected from the menu on the left. Place the mouse cursor over a parameter to active the tool tip and display a brief description about the parameter.

The panel on the bottom of the **ServerManager** window shows information related to databases from DFI and HSE OPC Servers, indicating which servers are valid and non-valid, and the total number of servers. This panel also indicates which servers are being executed.

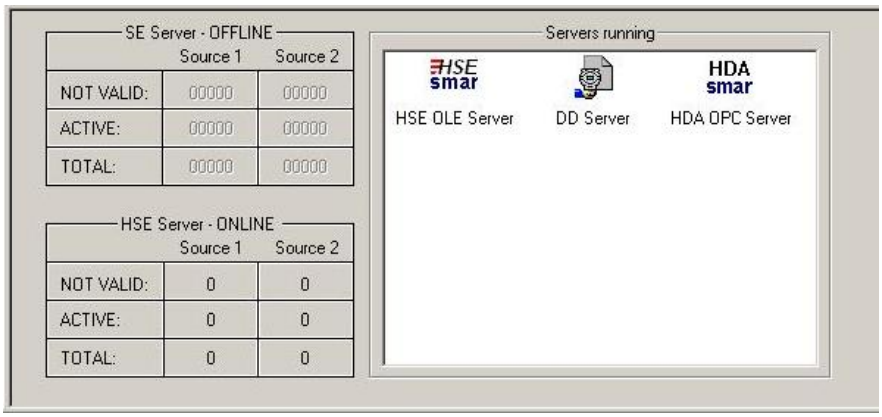


Figure A.5. Information related to the OPC Servers

After editing the configuration parameters, click **Apply All** to confirm the alterations and close the **ServerManager**. Depending on which parameters were edit, it may be necessary to restart **ServerManager** to apply the changes.

To shut down **ServerManager**, go to the **Application** menu and click **Exit**, or right-click the **ServerManager** icon on the taskbar and select **Exit**. The close button on the upper right side of the **ServerManager** window simply minimizes the application.

Figure A.6. Shutting down ServerManager

ServerManager shuts down only if there is no OPC Server being executed. Close all OPC clients and if there are OPC servers being executed, then **ServerManager** itself is being considered an OPC client. To disconnect **ServerManager** as an OPC client, go to the **Application** menu and click **Disconnect OPC Servers**.

You can also use the buttons on the OPC toolbar to disconnect an OPC server. When the button related to a server is selected on the OPC toolbar, it indicates the server is connected to **ServerManager**. Refer to section **Configuring Startup** for further details.

Figure A.7. OPC Toolbar

IMPORTANT
When closing **ServerManager**, wait a few seconds before initializing it again. This way, the list of processes executed by the operational system will be updated and the **ServerManager** application will be removed from this list. If the user tries to execute **ServerManager** right after closing the application, the **ServerManager** icon will not appear on the Windows taskbar because the process will be still active on the list of processes.

Another **ServerManager** functionality is to verify the current role of the **Host**. The *IDShell HSE* can execute two roles in a fieldbus network: it may be a **Configurator** or being executed on **Supervision Only** mode. To check the current role of a *HSE OPC Server* while it is being executed, go to the **Application** menu and click **Check Server role**, or right-click the **ServerManager** icon on the taskbar and click **Check Server role**.

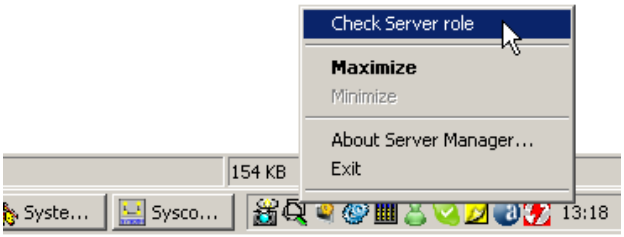


Figure A.8. Checking the IDShell HSE role

Configuring the Communication Network

On the **ServerManager** window, select the option **Settings > Network** to configure the interface cards used by the **ServerManager**.

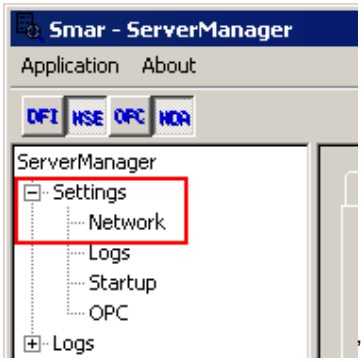


Figure A.9. Configuring the Communication Network

- At the **General** tab, configure the number of NICs (Network Interface Cards) and the IP addresses.
- At the **HSE Redundancy** tab, configure the network and HSE device redundancy.
- At the **Advanced** tab, configure the synchronization and the schedule for the supervisory.
- The **HSE Maintenance** tab is only available for users with Administrator rights and allows the administrator to delete the files related to the HSE persistency.
- At the **SNTP** tab, configure the *Application Clock Time*. Used for configuring the parameters related to time synchronism.
- The **RTU** tab must be configured only if the application uses remote access. In this tab, mark the option to enable the RTU mode and configure the necessary parameters for proper operation.

Configuring the number of Network Interfaces (NIC)

Click the option **Network** to open **ServerManager** at the **Network** > **General** tab.

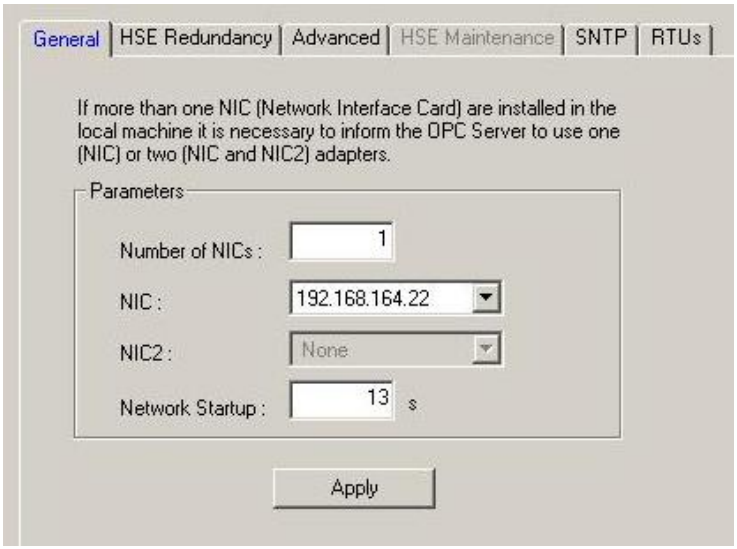


Figure A.10. ServerManager: General Tab

- Type the number of NICs used by the **ServerManager** in the HSE network. The number of NICs depends on the system redundancy, that is:
    - If the system is **not** redundant, only one NIC will be used to manage the communication, therefore type **1** in the **Number of NICs** textbox.
    - If the system is redundant, two NICs will be necessary to manage the communication, therefore type **2** in the **Number of NICs** textbox.
- Select the IP address of the NICs used by the **ServerManager**. **ServerManager** automatically lists the addresses of the adapters available in the local machine.

Configuring the HSE Redundancy

If the system is redundant, select the **HSE Redundancy** tab and configure the following parameters:

Figure A.11. ServerManager: HSE Redundancy Tab

- Select **ON** for the parameters **Device Redundancy** and **LAN Redundancy**.

- At the **Device Index** text box, type a value between **1** and **9** for each machine, and every machine must have a unique number. In the HSE network, the *Device Index* represents the network address for each equipment, therefore if the values are not unique for each machine, the network redundancy will not work correctly.

Configuring Synchronization and Supervision

At the **Advanced** tab:

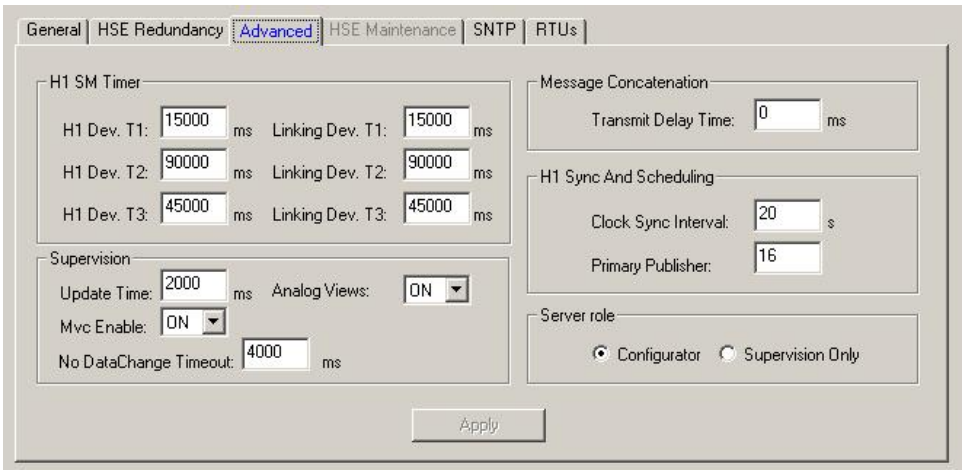


Figure A.12. ServerManager: Advanced Tab

Supervision:

- The **Update Time** parameter indicates the desired time interval to update the supervisory system. This interval should not be smaller than the macrocycle.
- The **MVC Enable** parameter enables the supervision optimization using the MVC resources available.
- The **No DataChange Timeout** parameter indicates the time interval to update the parameters that have not changed their values.
- The **Analog Views** parameter allows the user to create views for the 1131 supervision of analog variables.

Server role:

- Mark the option **Configurator** only for the machine where the plant configuration files are created. For the other machines where **SYSTEM302** is also installed, mark the option **Supervision Only** to indicate that they are acting in supervision mode only.

Configuring Message Concatenation

Starting with **SYSTEM302 version 7.0.6**, firmwares of all HSE controllers in **DFI302** implements the *Message Concatenation* method. This feature allows you to configure a control strategy with a higher number of external control links between controllers, because it reduces processing load in the controllers.

At the **Advanced** tab:

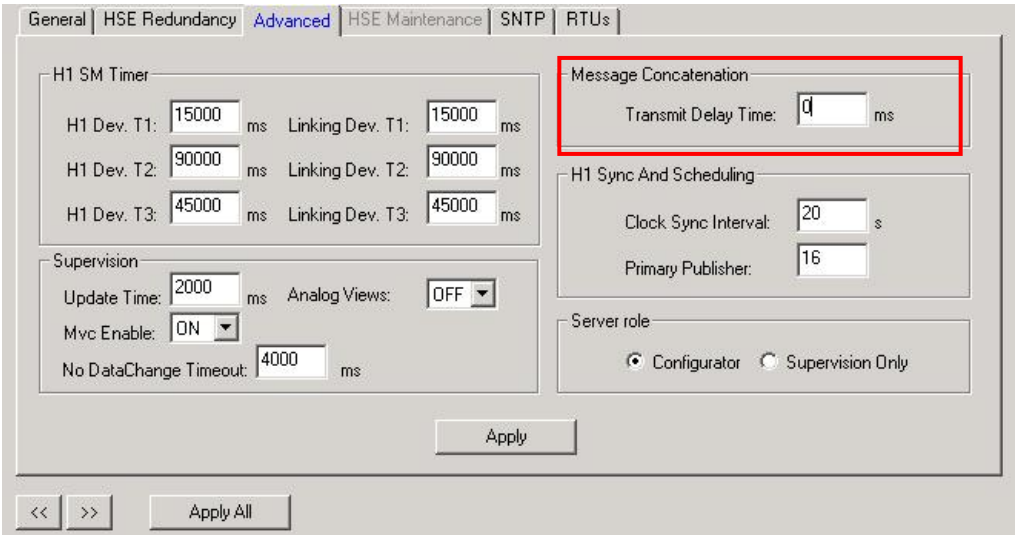


Figure A.13. Configuring message concatenation

Message Concatenation:

- The **Transmit Delay Time** parameter indicates the time interval that controls the message concatenation in the HSE controllers. This interval must be half the time of the macrocycle, in milliseconds.

IMPORTANT
After configuring the **Transmit Delay Time**, **restart** the **HSE OLEServer** and **download the plant configuration or the HSE fieldbus channel using Syscon** to enable the message concatenation method in all HSE controllers.

Deleting HSE persistency files

The **HSE Maintenance** tab is only available if the user is the *System Administrator* or a member of the *Administrators Group*. Only the user with *Administrator* rights can delete the files related to the IDShell HSE persistency.

Before deleting the persistency files, make sure the *HSE OLE Server* is not active and stop the network communication with all OPC clients, such as **Studio302** and **Syscon**. On the **ServerManager** window, go the **Application** menu and click **Disconnect OPC Servers**. A message box will appear to confirm the operation. Click **Yes** to conclude.

IMPORTANT
The procedure to delete the files related to the HSE persistency can hazard the system operation. Since this procedure is not often executed and it is considered an immediate solution, the **HSE Maintenance** tab will only be available during a 5-minute interval when the **ServerManager** is executed for the first time.

At the **HSE Maintenance** tab, click the button **Delete** to remove the files related to the HSE persistency.

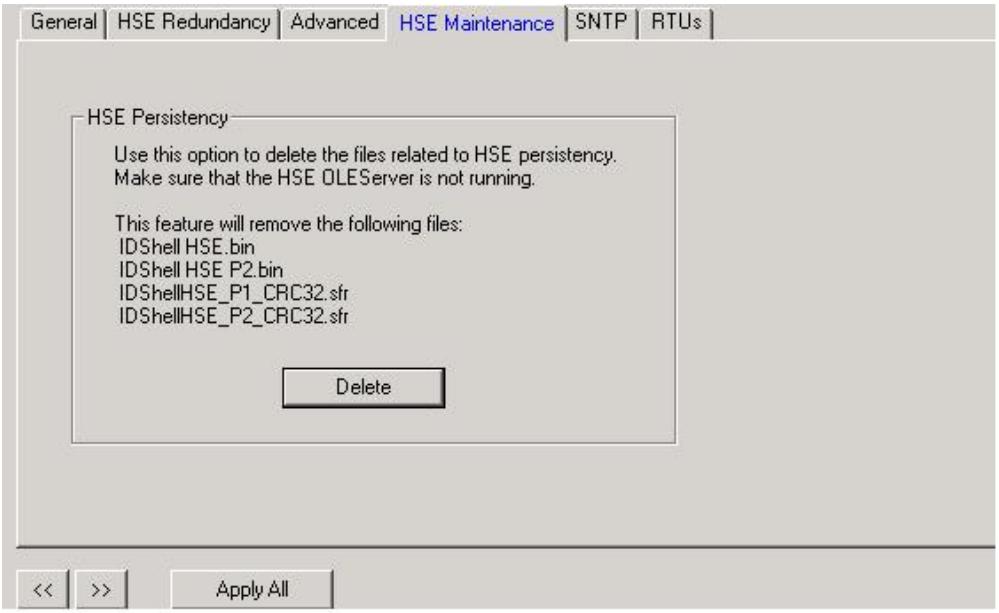


Figure A.14. ServerManager: HSE Maintenance Tab

A message box will appear informing the user about the hazards when executing this procedure. Click **Yes** to conclude.

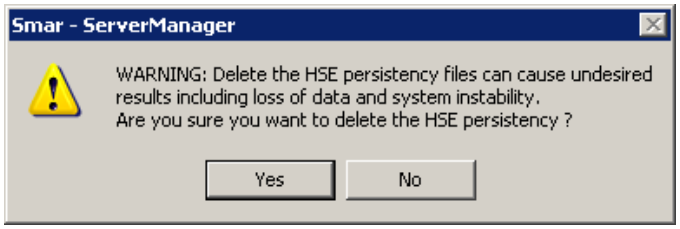

Smar - ServerManager
WARNING: Delete the HSE persistency files can cause undesired results including loss of data and system instability.
Are you sure you want to delete the HSE persistency ?
Yes
No

Figure A.15. Confirming the operation

Configuring the SNTP

Click the **SNTP** tab to configure parameters to synchronize computer clocks on the network.

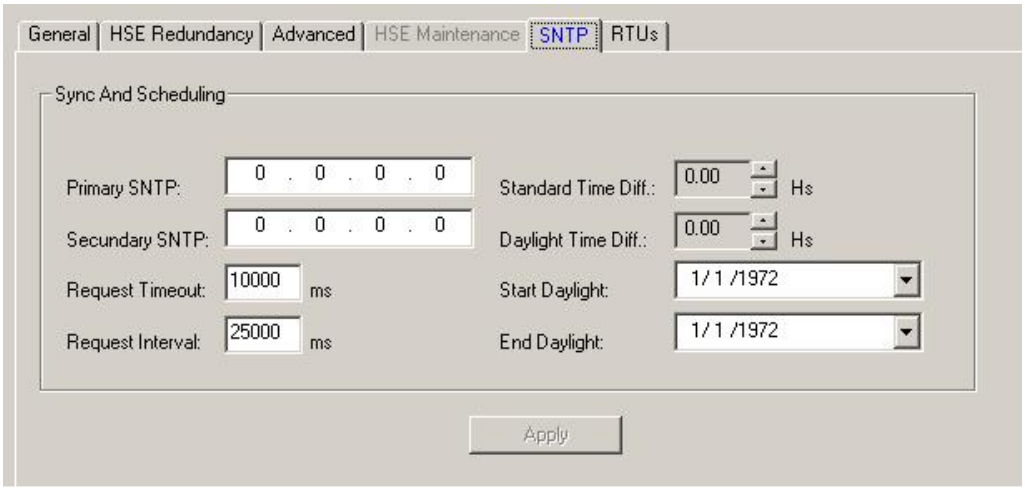


Figure A.16. ServerManager: SNTP Tab

Sync And Scheduling:

- Set the IP addresses of the SNTP Servers. If there is only one SNTP Server, type the **Primary SNTP Server** address and leave the **Secondary** address blank. If the machine where the SNTP Server is running has more than one NIC, you may choose an alternative IP as the **Secondary** address as long as both IPs are reachable on the network. Contact the information technology administrator and request the SNTP time server addresses available for the system.
- The parameters **Request Timeout** and **Request Interval** should not be altered. **Request Timeout** is the time (in milliseconds) that the **SNTP Time Client** waits for the **Time Server** to answer a time request in the HSE Network (the default value is 10,000 ms). **Request Interval** is the time (in milliseconds) that the **SNTP Time Client** waits to send requests to the **Time Server** in the HSE Network (the default value is 25,000 ms).
- **Standard Time Difference**: This variable contains the value to add to the current time to obtain **Standard time-stamp**. The default value is 0.
- **Daylight Time Difference**: This variable contains the value to add to the current time to obtain **Daylight time-stamp**. The default value is 0.
- **Start Daylight**: This variable indicates the beginning of Daylight Saving Time.
- **End Daylight**: This variable indicates the last day of Daylight Saving Time.

Note that the fields on the **SNTP** tab will be disabled if the system is configured as **Supervision Only**. To check the supervision mode, click the **Advanced** tab and the option **Supervision Only** must be selected on the **Server Role** area.

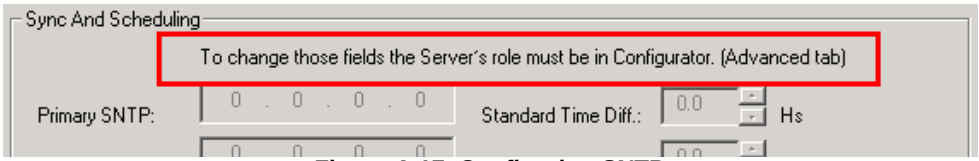

Sync And Scheduling
To change those fields the Server's role must be in Configurator. (Advanced tab)
Primary SNTP:
0 . 0 . 0 . 0
Standard Time Diff.:
0.0
Hs

Figure A.17. Configuring SNTP

Configuring Logs

Click the option **Logs** on the left panel in the **ServerManager** window to configure the options to enable or disable event logs.

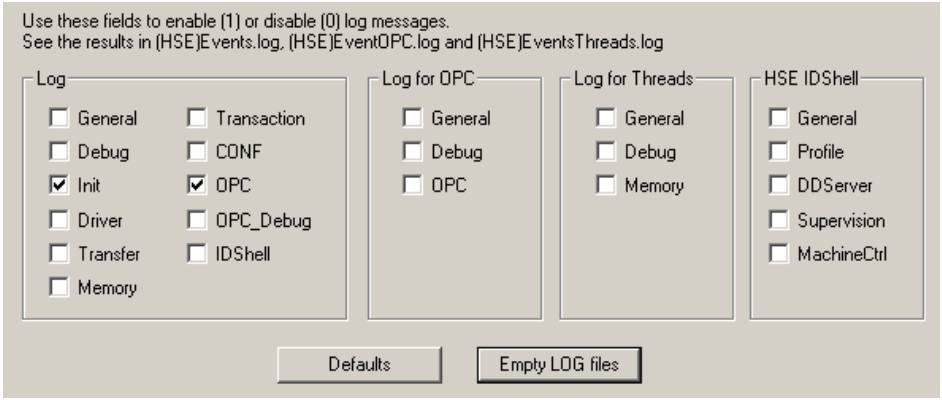


Figure A.18. *ServerManager*: Logs Tab

It is not necessary to restart each OPC server to generate event logs. However, for the options related to the **IDShell HSE**, it is necessary to restart the OPC server to start registering logs after configuring the events.

It is recommended to click the button **Empty LOG files** before selection reports to assure that previous information are deleted from the log files before registering new logs.

Configuring Startup

Click the option **Startup** to configure **ServerManager** to activate OPC servers based on a list of tags. Servers can be automatically executed when the operation system starts.

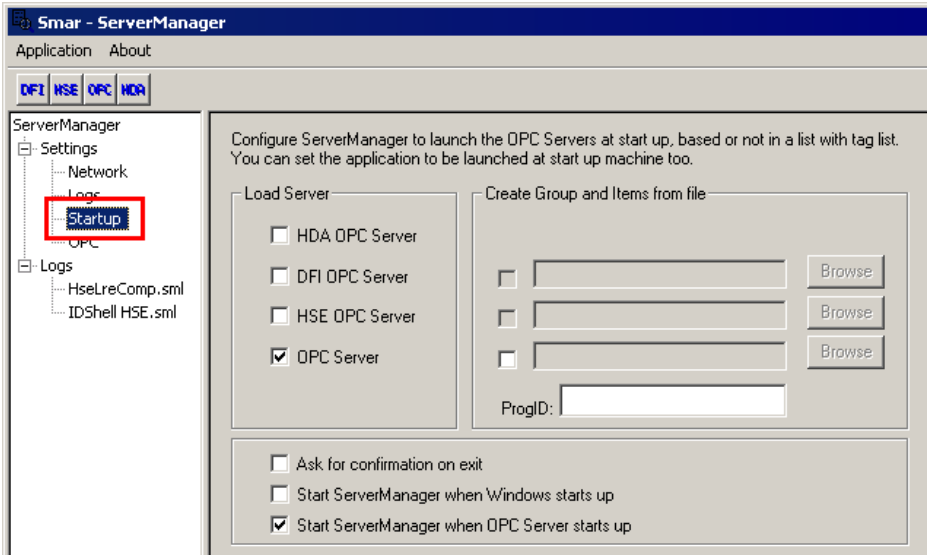


Figure A.19. ServerManager: Startup Tab

In the **Load Server** area, select the standard OPC server to be activated (**DFI**, **HSE** and **HDA**). When selecting the DFI and HSE servers, click the **Browse** button to select the **.lst** file that contains the list of tags from the plant process control.

To select another OPC server, mark the option **OPC Server**, click the **Browse** button to select the **.lst** file and type the **ProgID** (OPC server identification) of the server that will be activated by **ServerManager**.

The following options are available on the **Startup** tab:

- Check the item **Ask for confirmation on exit** to force the user to confirm the operation when shutting down **ServerManager**.
- Check the item **Start ServerManager when Windows starts up** to start **ServerManager** with the operational system.
- Check the item **Start ServerManager when OPC Server starts up** to start **ServerManager** every time an OPC server is initialized.

The OPC toolbar located below the main menu indicates which OPC servers are currently connected to **ServerManager** when the button related to the server is selected. To disconnect an OPC server, click the corresponding button. The example in the figure below indicates the **OPC HDA Server** and **OPC HSE Server** are connected:

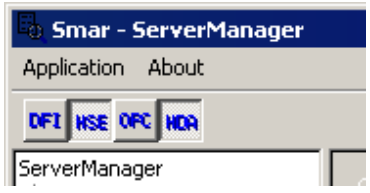


Figure A.20. OPC Toolbar

Generating the lst file

The **lst** file is generated according to the supervisory system configuration related to the plant process control. Follow the procedure below to enable the ***lst*** file and create the list of tags for supervision:

1. Close all **SYSTEM302** applications, including the supervisory tools and the **ServerManager**.
2. Locate the file **SmarOleServer.ini** on the **OleServers** directory. The default path of the **SYSTEM302** installation folder is "`C:\Program Files\Smar\OleServers`".
3. Edit the **SmarOleServer.ini** file using the Windows Notepad or other text editor. See the example below:

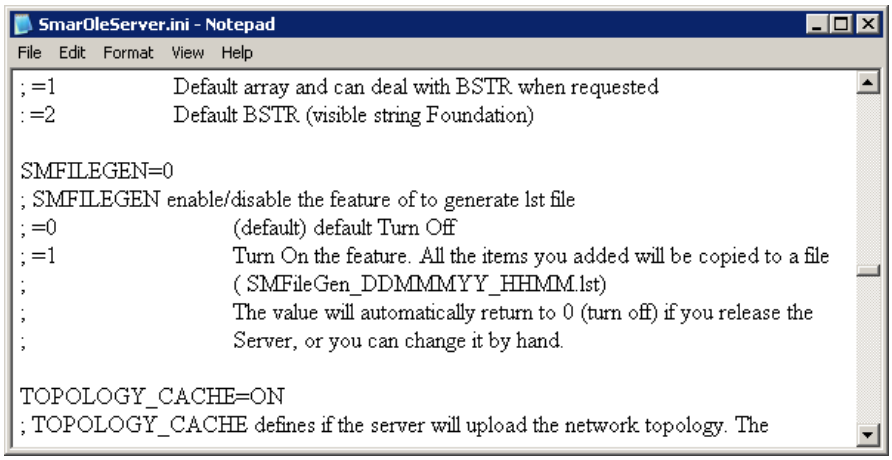

SmarOleServer.ini - Notepad
File Edit Format View Help
; =1 Default array and can deal with BSTR when requested
: =2 Default BSTR (visible string Foundation)
SMFILEGEN=0
; SMFILEGEN enable/disable the feature of to generate lst file
; =0 (default) default Turn Off
; =1 Turn On the feature. All the items you added will be copied to a file
; (SMFileGen_DDMMMYY_HHMM.lst)
; The value will automatically return to 0 (turn off) if you release the
; Server, or you can change it by hand.
TOPOLOGY_CACHE=ON
; TOPOLOGY_CACHE defines if the server will upload the network topology. The

Figure A.21. SmarOleServer.ini file

4. Locate the section **SMFILEGEN** and type the value **1** to generate the **lst** file. Save the alterations and close the text editor.
5. Run **ServerManager**.
6. Using the supervisory tool, open the screens which contain the points that will be read when the operational system is started. This step will update the list of tags in the **lst** file.
7. At this point, there are two options to conclude the process:
    a. Close all **SYSTEM302** applications, including supervisory tools and **ServerManager**. In this case, **ServerManager** will be automatically configured with the **lst** file generated and for being executed when the operational system restarts, initializing the OPC server.

    OR

    b. Edit the file **SmarOleServer.ini** and change the **SMFILEGEN** key value to **0** (zero). Close the editor saving the file, which will be created with all added items.

Now the **lst** file is created. The steps below are optional and specifically to test the **lst** file and create the cache list for the OPC server.

8. Run **ServerManager** again.
9. If you execute step **7.a**, **ServerManager** is already configured with a file with the name format **SMFileGen_DDMMMYY_HHMM.lst**. otherwise, if you executed step **7.b**, select the OPC server that will be executed and click the button **Browse** to select the **lst** file.
10. Restart **ServerManager** so the changes will take effect.

When the operating system is restarted, the selected OPC servers will be automatically executed. In order to use the **lst** file with other application, such as **TagView**, unmark the options automatically configured during the process to create the **lst** file.

Configuring the OPC

On the **ServerManager** window, select the option **Settings > OPC** to configure the Smar's OPC servers.

- At the **SNMP** tab, configure the list of available agents and their supervision settings.
- At the **A&E** tab, create the database with the initial conditions for the **Smar A&E OPC Server** to identify which events will be monitored.
- At the **HDA** tab, configure the options to execute maintenance on the database related to the Smar's **Historical Data Access Server**.

Configuring the SNMP OPC Server

The **SNMP OPC Server** provides important diagnostics information from the **DFI302** to compliant OPC clients via the SNMP (Simple Network Management Protocol).

The SNMP protocol defines agents and managers. Using **SYSTEM302**, **DFI302** acts as an agent and the **SNMP OPC Server** act as a manager. The SNMP allows read and write transactions between agents and managers.

The **SNMP OPC Server** configuration consists of listing the agents available and their respective network addresses.

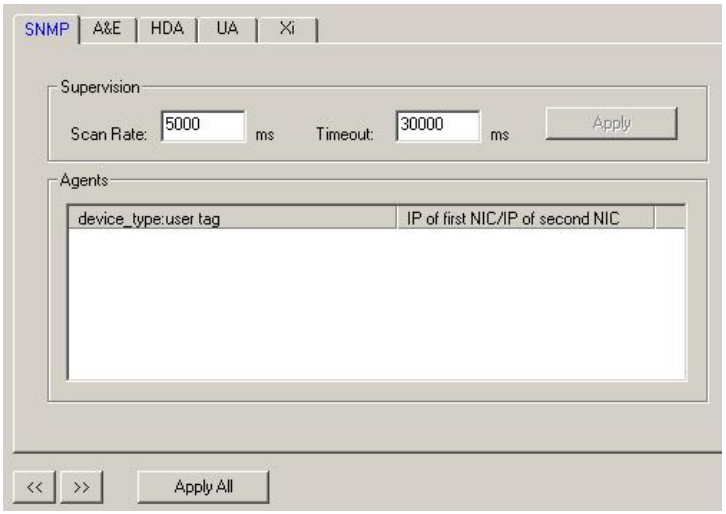


Figure A.22. ServerManager: SNMP Tab

Supervision:

- At the **Scan Rate** text box, define the rate interval for the server to poll the agents for information. The value is defined in seconds and it should not be changed often.
- At the **Timeout** text box, define the timeout for SNMP requests. The value is defined in milliseconds. Requests with responses exceeding the timeout period will result in bad quality for the associated OPC items. This setting should be changed only in cases of extremely loaded networks.

Agents:

- The **Agents** field lists all configured agents. There should be a user-defined tag assigned to each agent, limited to 32 characters. This tag will be used to build the OPC tags available in the server address space. Besides the tag, the user must specify the network addresses of the agents. Agents with two network interfaces should have both addresses specified. If only one address is specified, the **ServerManager** will only send SNMP requests to that interface and the network redundancy will not be available.

The **SNMP server** supports 64 agents. To add an agent, right-click the **Agents** list and select the option **Insert** from the popup menu:

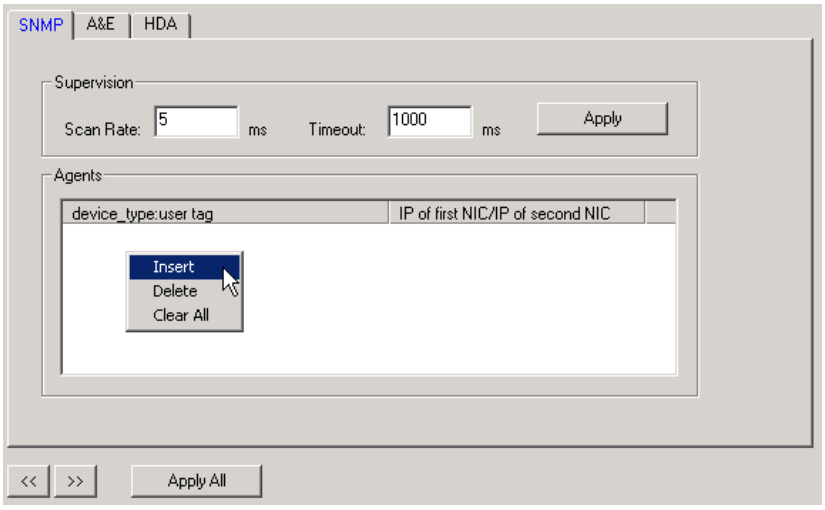


Figure A.23. Adding a new Agent

On the **SNMP Agent** dialog box:

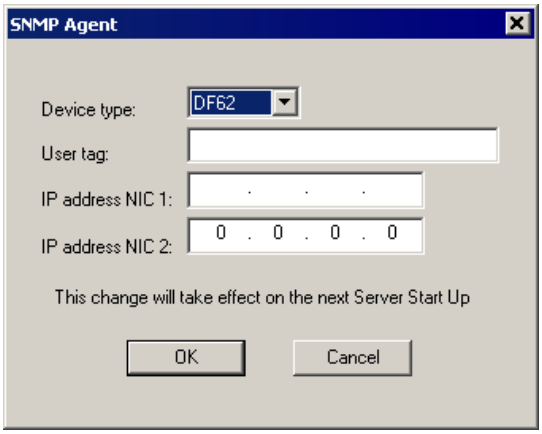


Figure A.24. Setting a new Agent

1. Select one of the DF modules from the **Device Type** list.
2. Type the tag name, which should not exceed 32 characters.
3. Type the IP address for the NIC 1. This address must be always specified.
4. If there is another network interface available, type the IP address for the NIC 2.

To remove an agent, right-click the agent icon that should be removed and select **Delete**.

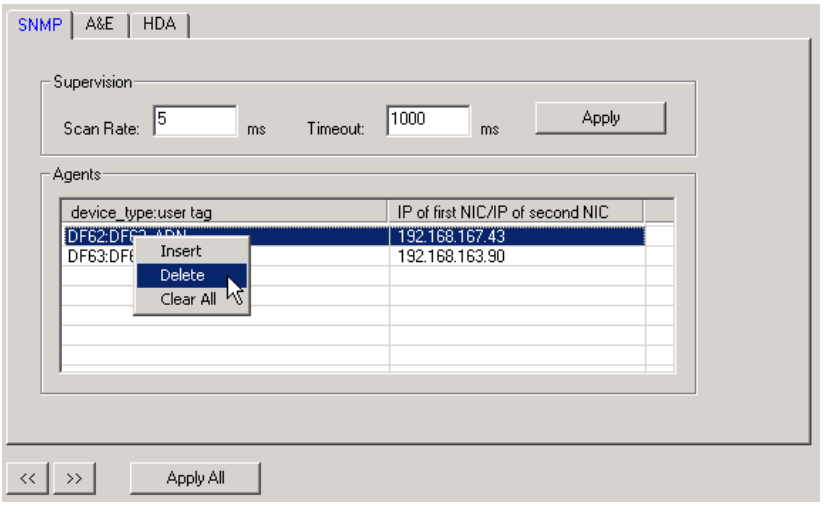


Figure A.25. Deleting an Agent

On the **SNMP Agent** dialog box, click **Delete** to confirm the operation.

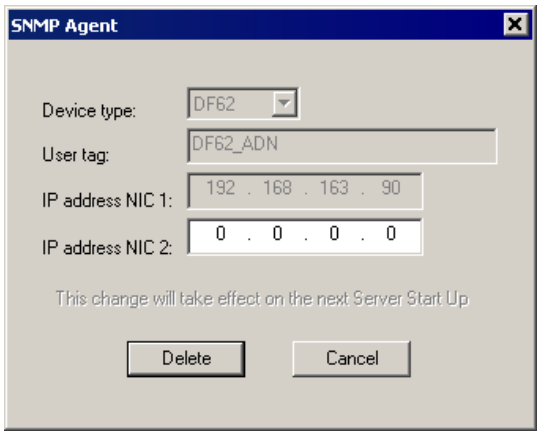


Figure A.26. Confirming the operation

To remove all agents from the list, right-click the **Agents** list and select **Clear All**. A message box will appear to confirm the operation. Click **Yes** to remove all agents from the list.

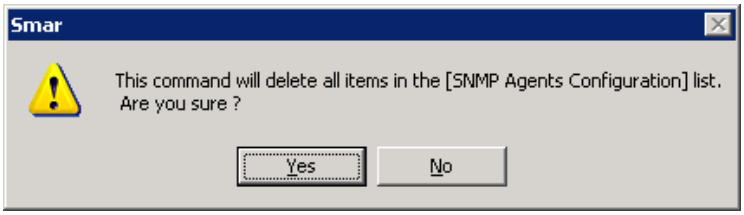


Figure A.27. Deleting all agents

Configuring the A&E Server

The **Alarms & Events OPC Server** uses the information from the **AlarmInfo.ini** file to generate the initial conditions and identify which events will be monitored.

When executed for the first time, before creating the database, the **A&E OPC Server** may take a few minutes to startup depending on the number of devices configured to generate alarms and events that should be monitored by the server. Use **ServerManager** to create the database for the **A&E OPC Server** with the information generated by the configuration tools and, therefore, the server startup will be faster.

Click the button **Generate Database** to create the database with the initial conditions for the **A&E OPC Server.** A message box will open alerting the user that this operation may take a few minutes to be completed. Click **Yes** to proceed.

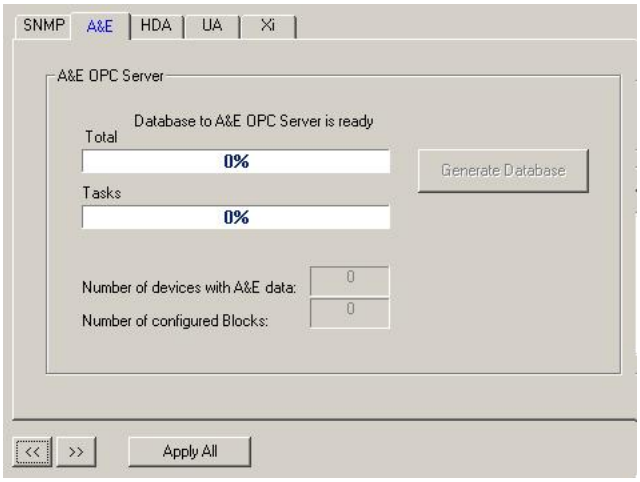


Figure A.28. Generating initial database for A&E OPC Server

ServerManager alerts the user when the alarm database is not updated. When a new **AlarmInfo.ini** file is created by **Syscon**, **ServerManager** detects this event and the icon on Windows taskbar indicates the database is outdated. See the following example:

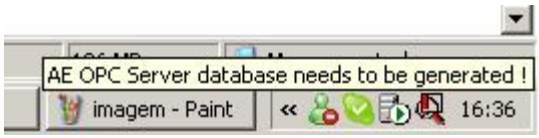


Figure A.29. Alert from A&E OPC Server

This tab also displays information related to the number of devices and blocks configured with alarms.

Configuring the HDA OPC Server

HDA OPC Server uses information from the file **TrendInfo.ini** to enable devices that will be monitored through fieldbus events from the **HSE OPC Server**.

When the **HDA OPC Server** is executed, after configuring the devices, received data are stored in a database named **Trends**, created in the SQL Server 2005 for **SYSTEM302**.

At the **HDA** tab, check the information related to the number of devices and **Trend** objects configured. This tab also provides maintenance for the database file. Clicking the button **Empty Tables** removes **all** data stored in the HDA database.

IMPORTANT
Maintenance procedures can only be executed if the **HDA OPC Server is not being executed**. Therefore, disconnect any HDA OPC client before executing the operations related to copying or compressing the database, and mainly before deleting a database.

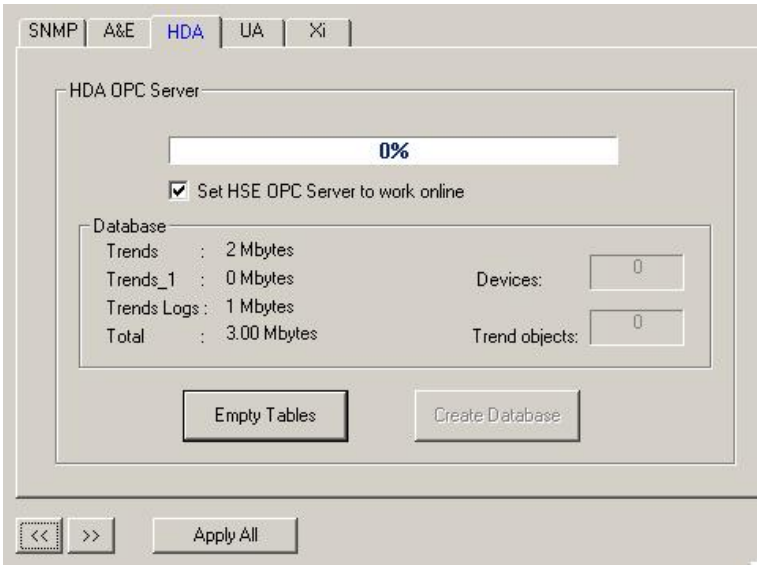


Figure A.30. ServerManager: HDA Tab

- Click the button **Empty Tables** to delete all information from the **Trends** database.

Unmark the option **Set HSE OPC to work online** to search the database in offline mode. This way, the **HDA OPC Server** will not request the services from the **HSE OPC Server** when instantiated. Use this mode to connect to the trends server and search information in the database.

Database information are displayed at the HDA tab, such as the current database size. If the SQL Server 2000 is installed, the database size will be 2GB. For SQL Server 2005, the database size is 4GB.

Using the Wrapper for the OPC UA Server

The wrapper for OPC UA provides data from the OPC DA 2.0 for HSE server (HSE OPC Server), to the OPC UA standard.

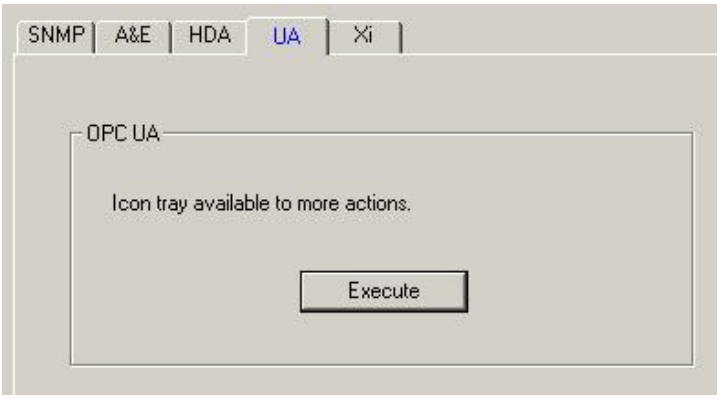


Figure A.31. ServerManager: UA Tab

The first time the application is executed, it automatically guides the user to record the certificates required for the application to work properly.

Click **Execute** and use an OPC UA client to connect to the OPC UA wrapper.

Displaying Log Files

ServerManager manages log files from **SYSTEM302** applications that generate alerts to the users.

For each new message, the **ServerManager** icon on the taskbar alerts the user about the event and the file related to that log is highlighted on the panel at the left side of the **ServerManager** window.

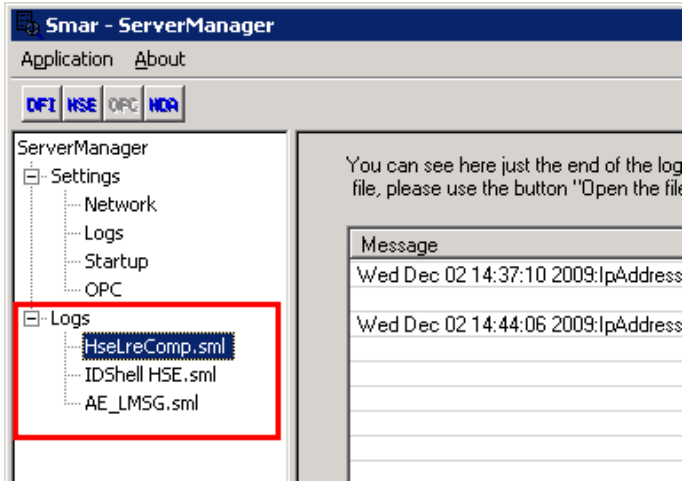


Figure A.32. List of Log Files

When an event log file is generated, it is available on the list of reports from the **Log** menu, on the left panel. Click the name of the log file to open the report and display the last messages generated.

Click the button **Open the file** available on the message panel to open the log file and display all messages stored in that file.

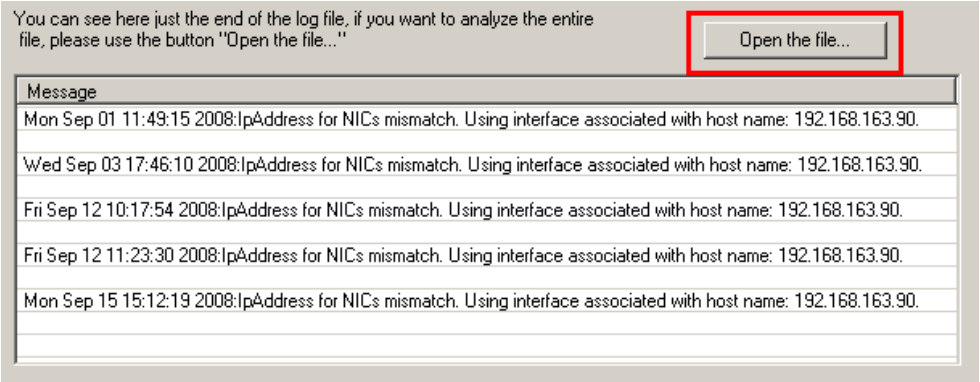

You can see here just the end of the log file, if you want to analyze the entire file, please use the button "Open the file..."
Open the file...
Message
Mon Sep 01 11:49:15 2008:IpAddress for NICs mismatch. Using interface associated with host name: 192.168.163.90.
Wed Sep 03 17:46:10 2008:IpAddress for NICs mismatch. Using interface associated with host name: 192.168.163.90.
Fri Sep 12 10:17:54 2008:IpAddress for NICs mismatch. Using interface associated with host name: 192.168.163.90.
Fri Sep 12 11:23:30 2008:IpAddress for NICs mismatch. Using interface associated with host name: 192.168.163.90.
Mon Sep 15 15:12:19 2008:IpAddress for NICs mismatch. Using interface associated with host name: 192.168.163.90.

Figure A.33. Opening a Log File

You can associate a text editor application, such as **Notepad**, to open log files with the extension ***.sml** (**S**erver**M**anager **L**og) automatically.

Every time a new message is generated in a log file, the **ServerManager** icon on the taskbar will alert the user about that event. See the following example:

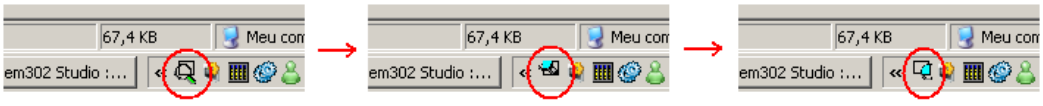


Figure A.34. Alert from the ServerManager icon